

DIGITAL AUDIO RECORDER ACT OF 1987

HEARING
BEFORE THE
SUBCOMMITTEE ON COMMUNICATIONS
OF THE
COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE
ONE HUNDREDTH CONGRESS
FIRST SESSION
ON
S. 506
TO REQUIRE THE INCLUSION OF COPY-CODE SCANNERS IN DIGITAL
AUDIO RECORDING DEVICES

MAY 15, 1987

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DIGITAL AUDIO RECORDER ACT OF 1987

FRIDAY, MAY 15, 1987

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
SUBCOMMITTEE ON COMMUNICATIONS,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:40 a.m. in room SR-253, Russell Senate Office Building, Hon. Daniel K. Inouye (chairman of the subcommittee) presiding.

Staff members assigned to this hearing: Tom Cohen and Toni Cook, staff counsels; Katherine Meier and Gina Keeney, minority staff counsels.

OPENING STATEMENT BY SENATOR INOUE

Senator INOUE. This morning we meet to consider S. 506, the Digital Audio Recorder Act of 1987. This bill was introduced by my distinguished colleague, a member of the Communications Subcommittee, Senator Gore. It is intended to protect the intellectual property rights of prerecorded music from tape recording.

S. 506 would accomplish this by prohibiting for three years the sale, resale, lease, or distribution of digital audio recording devices which do not contain a copy code scanner chip. This chip would prevent the unauthorized duplication of copyrighted recordings.

While S. 506 is before the Communications Subcommittee for the first time, it raises issues that have been a matter of recent Congressional debate. The music recording industry and the artists making prerecorded music have been arguing for many years that illegal recording has been so pervasive that it harms the quantity and the diversity of recorded music.

These parties have attempted to gain relief by having the Congress pass legislation that would place a fee on tapes and tape recorders. The Congress, however, has yet to be persuaded that such legislation is justified.

S. 506 addresses the same concern about alleged illegal taping and the harm it causes, but it does so in the context of a new product, one not yet on the American market, the digital audio recorder. Rather than pursuing the fee remedy, this bill proposes that we require the adoption of a technological fix, that is the use of the copy code scanner chip.

This bill thus raises the fundamental copyright issues that have been previously debated and places them in the context of the new digital audio recorder. It also raises the basic issue of whether policies should be adopted that forecloses or otherwise limits a certain technology.

And as chairman of this subcommittee, I look forward to hearing from the witnesses on these and other issues. And at this time it pleases me greatly to call upon the author of the measure, Senator Gore.

OPENING STATEMENT BY SENATOR GORE

Senator GORE. Mr. Chairman, thank you very much for your statement. Thank you very much for holding this hearing on the problems presented by digital audio taping, or DAT.

As a co-sponsor of S. 506 along with my distinguished colleagues Senator Wilson from California, Senator Cranston from California, Senator Kerry from Massachusetts and Senator D'Amato from New York—and that legislation is known as the Digital Audio Recorder Act—I look forward to having the facts about DAT presented to the subcommittee today.

Now, Mr. Chairman, before we begin we should note what this legislation does not do. I have noticed with increasing amazement how the well-funded and highly organized lobbyists for the Japanese manufacturers and their importers have distorted the intent of this modest legislation.

The so-called Home Recording Rights Coalition has tried just about every imaginable line in opposing S. 506. The manufacturers' group has tried to paint the bill as the slippery slope to eliminating video recorders. Recently it even had one of its representatives say publicly that the bill would eliminate home satellite dishes. They will try anything.

Mr. Chairman, there is an old saying that, if you do not have the facts argue the law, if you do not have the law argue the facts, if you have neither pound the table. We have seen a lot of table-pounding in opposition to this legislation.

What the debate is really about is whether or not legitimate holders of copyrighted property ought to be able to protect that property against unauthorized taking of that property. It is a time-honored principle, after all.

What this debate is about is our commitment to a 100 percent domestic industry facing clear injury as a result of a head-in-the-sand mentality taken by the Federal government. And Mr. Chairman, let us be candid about the need to keep this bill alive, to keep it moving toward enactment.

The manufacturers overseas will absolutely refuse to negotiate with American copyright interests if they believe that Congress has decided to ignore the domestic music industry's problem. For that reason alone, we must work to keep this bill moving.

It should also be enacted. I am convinced we must move swiftly to address the threat that these DAT recorders pose to American music.

We will hear today from witnesses who will document for us the adverse effects that these machines about to be exported to our country will inevitably have on our economy and culture. We will therefore leave it to them to inform the subcommittee of the disturbing facts about DAT recorders.

I would like to highlight, however, some of the compelling arguments in support of the legislation to respond to this challenge. For

many years, as you noted, Mr. Chairman, the home taping problem has grown, causing displacement of record sales. But DAT machines will raise the problem to an entirely new dimension, because for the first time home tapers will be able to make perfect or nearly perfect copies of recordings and to make unlimited additional copies from each copy, each one just as good as the original.

There will be very little incentive any longer to go out and buy the recording when you can simply borrow someone else's album and make a copy just as good as the one in the store, or borrow someone else's copy of a copy and copy that, and still have a version identical in quality and in every way to the original version.

The devastating effect that these machines will have on our music community is obvious. The harm of DAT will extend even beyond that inflicted on creators and producers who are cheated of the full rewards of their labors.

The music industry is one of the few industries that returns a positive trade balance to the United States. You can go anywhere in the world, Mr. Chairman, virtually—well, literally, any single country in the world—and turn on the radio and, if an American song is not being played, wait just a few minutes, and an American song will be played.

It is one of the most successful industries we have ever created, and it now has a dominant position throughout the world. It is an important contributor to U.S. trade competitiveness and an important source of employment in this country.

If DAT machines are permitted to undermine the vitality of American music, we all stand to lose. What is at stake really is whether or not manufacturers of a new kind of hardware will be able to siphon away the legitimate profits due to the creators of the software, so to speak.

These are reasons why I have proposed, along with my colleagues, legislation to require the manufacturers of DAT machines to install a device called a copy code scanner in their recorders. This device will control the unauthorized taping of copyrighted recordings.

And I am convinced that this legislation, which would remain in effect for three years, will preserve the status quo and prevent grave damage to our music community while we in Congress deliberate and adopt a permanent solution.

I want to emphasize the necessity of prompt action because the DAT machines may be in our stores some time this summer or early fall.

So I am hopeful that the testimony offered today will clarify the facts and frame the issues and advance our efforts to work together in resolving this problem. I look forward to hearing what I am certain will be informative and stimulating testimony.

Thank you, Mr. Chairman.

Senator INOUE. Thank you very much.

And I am pleased to call upon a co-author of the measure before us, the gentleman from California, Senator Wilson.

OPENING STATEMENT BY SENATOR WILSON

Senator WILSON. Thank you very much, Mr. Chairman.

First, I thank you for your scheduling this hearing on S. 506, the Digital Audio Recorder Act. And I commend my colleague from Tennessee, Senator Gore. I was very pleased to join with him and my friend and colleague from California, Senator Cranston, in introducing the legislation earlier this year.

While this bill would affect only a small part of the marketplace, it is of vital importance to one terribly important segment of our economy, a very distinguished American institution, the music industry.

And what I find fascinating about the developing debate on this legislation is that those who oppose it have tried to obscure its very simple, legitimate purpose. Those who oppose the DAT bill claim that it would prevent a practice that has been going on for years, namely home taping.

Well, Mr. Chairman, the fact that an injurious activity has been going on for years because of a gap in existing law is nothing new. And neither is it new for the Congress to recognize those gaps and attempt to take remedial action. And that is precisely what we are here this morning to begin.

Specifically, our wiretap laws used to only prohibit people from listening to phone conversations. Then computers came along and there was no law there to prevent tapping into computer signals being carried over telephone lines. But the Congress filled that gap. Congress responded.

A number of high school and college computer hackers used to like to break into other people's computer systems, and there was no law to prevent the theft of information from those systems, for there was at the time "no tangible property being taken."

But Congress recognized that that was wrong and recognized that the gap in the law should not permit it, and Congress took action.

Mr. Chairman, we obviously cannot stop home taping. But I am not going to sit idly by as foreign producers try to flood our market with a machine designed to perfect the practice, any more than I could sit idly by and let them start shipping to the United States better burglary tools or electronic devices for breaking into bank vaults.

All that this bill provides is that the people who create music have a right to be compensated for their efforts and that right, time-honored in our law, should be protected, adequately protected.

It is a right as basic as our economy. It is a right that may not be taken by government without just compensation. It is a right of any property owner in the country, and no lesser right because the property in question is intangible, because it is intellectual property.

A songwriter may write music for the sheer joy of composition, but if the public likes the song then it is our expectation that the songwriter will be compensated for the time and the effort that has been involved in creating that pleasure for himself and for others; just as the singer may sing the music because it is pleasing to her own ears, but if there are people who want to hear her or who want to take home a copy of her rendition, should they not pay for the privilege?

Well, of course they should, and they have. That has been the system for a very long time.

And a group of musicians who play music together because they enjoy each other's company and enjoy creating that sound together may do so for that purpose. But if they then go to the further trouble of organizing and finding backing to record, why then, we expect them to be paid for their efforts, as well as those who finance their efforts.

Now, of course the songwriter, the singer, and the musicians all have a right to benefit from the fruits of their labor. And if some technological threat comes to market that would deny America's artists, either the famous or those hoping to be famous, from making a living, the government should act to see that that threat does not work its will.

Nor should we be dissuaded by the mere fact that some foreign purveyors of stereo equipment or magnetic tapes spend money to manufacture a claim of consumer interest. American consumers have expected to pay for quality. They do not expect something to be free in terms of intellectual property, or should not, any more than they can expect to walk into a supermarket and walk out with a can of peaches or a box of cleanser without paying for it.

American consumers have always been willing to pay for quality products, and American music is quality. But it will remain so only as long as those that produce it are decently compensated, which means they must be protected in their copyright.

So as I have said, the real rights in question are those rights of American artists, and they are very much at risk. What is not a right is the practice of copying copyrighted material.

Such a practice, to the extent that it is allowed, is a matter of legislative grace. For while government may not take your property without compensation, it may regulate your use of it, just as zoning regulates the use of real property.

Regulations, which should be kept to a minimum, are nonetheless necessary at times to prevent people from using their property to the detriment of others. Specifically, when an individual produces a record, tape, or disk, the copyright on the recorded music does not come with the record itself, any more than a copyright comes when you buy a copy of a book.

The copyright is a separate property right apart from the physical medium on which it is recorded. And the problem arises when someone uses his or her property right in the physical recording in such a way that it lessens the value of the property right that belongs to the copyright holder.

As long as there has been affordable technology allowing the copying of prerecorded music, there has been harm inflicted on the music makers. But what began the real blood-letting in the music industry was the two-port cassette tape recorders, a mechanical license to steal.

Now, while I can appreciate someone making a recording of a record for use in a Walkman or in a car, it escapes me why more than a very few consumers might need more than one cassette copy of a record. Certainly the number of consumers needing more than one tape of any one recording cannot be as great as the

number of multi-port tape recorders which has been shipped to the United States from Japan, Korea, Taiwan, and Hong Kong.

These machines are being used for infringing purposes, and this is made clear in the way that they are advertised.

Now comes digital audio technology, DAT. This technology is more than a new way to copy music. It is a way unto itself. Why is this new technology so significant? Well, as Senator Gore has indicated, it is because when one considers a DAT recorder's ability to copy prerecorded music, it brings to mind the old beer ad: Your last one is as good as your first.

Each bootleg copy is as perfect as the original at the beginning of the bootleg chain. A traditional tape copy, an analog recording of a record or tape, is not quite as good as the original. Furthermore, subsequent copies are even less true to the original.

However, digital copies are indistinguishable from the digital originals. Specifically, a DAT recording of a compact disk sounds as good as the CD itself.

Imagine the damage that one college student could do with a good collection of CD's. In the past, if he cared about the longevity of his vinyl records he would not loan them to anyone except perhaps his closest friends. With a nearly indestructible CD, loans to each of his acquaintances owning a DAT machine would cost him nothing, but would deny the artist his due many, many times.

Those who oppose S. 506 claim that it would deny them the right to make copies for their own use. Well, let us analyze this claim. First, as I stated, there is no right to make copies. It is a matter of legislative grace where it exists at all.

As for the desire for copies, an analysis shows little, if any, disruption of reasonable home recording. In the past, some audiophiles have made tapes of their vinyl records because the records do degrade with use. Others made tapes for their cars or portable tape decks, such as Sony's Walkman.

But with the new technology, the music listeners' interests change. There is no need to make a recording of a CD to prevent its being degraded by multiple uses. Indeed, a CD, because it has no moving parts, will last longer than a digital tape.

The other claimed need for digital copies is for the car or portable player. But the road noise and other sounds one encounters outside make insignificant the better sound produced by a digital recording.

Finally, it is worth noting, as we are in the midst of a national debate on trade policy, where the financial interests lay. The vast majority of music sold in the U.S. is American. All of the DAT machines and all of the digital tapes will be made overseas.

With this in mind, it makes no sense to reward a number of prosperous Japanese companies that have developed a new technological leech to float on the American economy.

Mr. Chairman, there are yet other justifications for this legislation, but I think that the sponsor in his opening statement and the instances that we have produced thus far make it clear why it is necessary. It is simply to protect the copyright, without which we cannot expect American artists or those who finance their efforts to continue making that investment of time, effort or money.

Senator INOUE. Thank you very much, Senator.

At the request of Senator Hollings and Danforth, without objection their statement along with the bill will be made part of the record.

[The statement and bill follow:]

OPENING STATEMENT BY THE CHAIRMAN

I want to thank Senator Inouye for holding this hearing on S. 506, the Digital Audio Recorder Act. The Congress has debated for many years the general issue of whether copying for private use should be permitted. So far, the consensus appears to be that private use—not for commercial gain—should be permitted. This hearing today will discuss whether that precedent should be continued or altered. In addition to addressing the fundamental copyright issue, this hearing will focus on the role of the Government in controlling technology. Should the Government generally be able to restrict the offering of a specific technology, and if we believe so, under what conditions? I look forward to the discussion today on these key issues, as well as other matters raised by this legislation.

OPENING STATEMENT BY SENATOR DANFORTH

First of all, I want to thank Chairman Inouye for taking time from his very busy schedule to chair today's hearing.

Technological developments have enabled consumers to enjoy products never even imagined a few years ago. One example is the video cassette recorder (VCR). Another is the topic of today's hearing, the Digital Audio Tape Recorder (DAT).

These new products create a tension in the law and in public policy. Should consumers be permitted to copy the works of artists? How can we ensure that artists who compose or play music can profit from their work? Can we stop commercial piracy while enabling consumers to make copies for their own use?

One of my principal concerns as a U.S. Senator has been the protection of intellectual property rights. When people compose music, write a book, play in a band or symphony, make a movie, or create other property of commercial value, they should profit from their work.

I have sponsored legislation to crack down on commercial piracy in international trade, and to improve domestic copyright and patent laws. I am strongly committed to the protection of rights conferred by copyrights, trademarks and patents.

Senator Gore's DAT bill, S. 506, the "Digital Audio Recorder Act of 1987," appeared to offer the promise of discouraging commercial piracy of digital audio recordings. I cosponsored Senator Gore's bill because I believe Congress should act energetically to discourage commercial piracy in the broadest possible range of products and technologies.

Unfortunately, there is a drawback to S. 506—the means it employs could impede home taping for private and non-commercial use. I believe we should not restrict home taping. Therefore, when I decided to cosponsor Senator Gore's bill, I made it a point to determine whether the bill could be modified to ensure that it does not infringe on home taping for private, non-commercial uses.

Because I concluded that such modifications would be more difficult than anticipated, I have decided to withdraw my support for the bill. If a means can be found to protect intellectual property rights without affecting legitimate home taping, I would welcome it.

Commercial piracy is a very serious problem. In contrast, home recording for private use expands the audience for music and improves sales. One test of legislation in this area is that it discourage commercial piracy without infringing on recordings by consumers for personal use. I doubt that Senator Gore's bill can be modified to meet this test. I will not support DAT legislation until I see a practical alternative.

100TH CONGRESS
1ST SESSION

S. 506

To require the inclusion of copy-code scanners in digital audio recording devices.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 5, 1987

Mr. GORE (for himself, Mr. WILSON, Mr. CRANSTON, Mr. DANFORTH, and Mr. KERRY) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To require the inclusion of copy-code scanners in digital audio recording devices.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 SHORT TITLE

4 SECTION. 1. This Act may be cited as the "Digital
5 Audio Recorder Act of 1987".

6 DEFINITIONS

7 SEC. 2. As used in this Act, the following terms and
8 their variant forms have the following meanings:

9 (1) "Commerce" means commerce among the sev-
10 eral States of the United States or with foreign na-
11 tions, or in any territory or possession of the United

1 States or in the District of Columbia, or among the
2 territories or possessions or between any territory, pos-
3 session, State, foreign nation, or between the District
4 of Columbia and any State, territory, possession, or
5 foreign nation.

6 (2) A "copy-code scanner" is an electronic circuit
7 or comparable system of circuitry (A) which is built
8 into the recording mechanism of an audio recording
9 device; (B) which, if removed, bypassed, or deactivat-
10 ed, would render inoperative the recording capability of
11 the audio recording device; (C) which continually de-
12 tects, within the audio frequency range of 3,500 to
13 4,100 hertz, a notch in an encoded phonorecord; and
14 (D) which, upon detecting a notch, prevents the audio
15 recording device from recording the sounds embodied
16 in the encoded phonorecord by causing the recording
17 mechanism of the device to stop recording for at least
18 25 seconds.

19 (3) A "digital audio recording device" is any ma-
20 chine or device, now known or hereafter developed,
21 which can be used for making audio recordings in a
22 digital format. The term "digital audio recording
23 device" includes any machine or device which incorpo-
24 rates a digital audio recording device as part thereof.

1 (4) An "encoded phonorecord" is a phonorecord
2 which has a notch within the audio frequency range of
3 3,700 to 3,900 hertz.

4 (5) A "notch" is an absence of sound resulting
5 from the removal of sound signals at a certain fre-
6 quency.

7 (6) A "person" includes any individual, corpora-
8 tion, company, association, firm, partnership, society,
9 joint stock company, or any other entity.

10 (7) A "phonorecord" is a material object in which
11 sounds, other than those accompanying a motion pic-
12 ture or other audiovisual work, are fixed by any
13 method now known or later developed, and from which
14 the sounds can be perceived, reproduced, or otherwise
15 communicated, either directly or with the aid of a ma-
16 chine or device. The term "phonorecord" includes the
17 material object in which the sounds are first fixed.

18 DIGITAL AUDIO RECORDING DEVICES

19 SEC. 3. (a) No person shall manufacture, assemble, or
20 offer for sale, resale, lease, or distribution in commerce (1)
21 any digital audio recording device which does not contain a
22 copy-code scanner; or (2) any device, product, or service, the
23 primary purpose or effect of which is to bypass, remove, or
24 deactivate a copy-code scanner: *Provided*, that any patent,
25 technical know-how, or proprietary rights necessary for man-

1 ufacturing a copy-code scanner have been made available by
2 means of a royalty-free license.

3 (b) No person shall bypass, remove, or deactivate a
4 copy-code scanner.

5 REMEDIES

6 SEC. 4. (a) Any person aggrieved by any violation of
7 section 3, or any appropriate officer or agency of the United
8 States, may bring a civil action in any appropriate United
9 States district court. Such court may (1) grant temporary and
10 final injunctions on such terms as it may deem reasonable to
11 prevent or restrain violations of section 3; (2) grant such
12 other equitable relief as it may deem reasonable; and (3)
13 direct the recovery of full costs, including reasonable attor-
14 neys' fees, by an aggrieved party, other than the United
15 States or an officer or agency thereof, who prevails.

16 (b) An aggrieved party shall be entitled to recover dam-
17 ages which shall be computed, at the election of the ag-
18 grieved party at any time before final judgment is entered, in
19 accordance with either of the following:

20 (1) the aggrieved party may recover the actual
21 damages suffered by him as a result of the violation
22 and any profits of the violator that are attributable to
23 the violation which are not taken into account in com-
24 puting the actual damages; in determining the viola-
25 tor's profits, the party aggrieved shall be required to
26 prove only the violator's gross revenue, and the viola-

1 tor shall be required to prove his deductible expenses
2 and the elements of profit attributable to factors other
3 than the violation; or

4 (2) the aggrieved party may recover an award of
5 statutory damages in an amount of not less than
6 \$1,000 nor more than (A) \$10 multiplied by the
7 number of devices or products involved in the violation
8 or (B) two times the cumulative retail value of the
9 services involved in the violation, as the court consid-
10 ers just.

11 (c) At any time while an action is pending, the court
12 may order the impounding, on such terms as it may deem
13 reasonable, of any digital audio recording device which does
14 not contain a copy-code scanner, or any device or product the
15 primary purpose or effect of which is to bypass or deactivate
16 a copy-code scanner, that is in the custody or control of the
17 alleged violator.

18 (d) As part of a final judgment or decree, the court may
19 order the destruction, modification, or other disposition of any
20 digital audio recording device which does not contain a copy-
21 code scanner, or any device or product the primary purpose
22 or effect of which is to bypass or deactivate a copy-code scan-
23 ner, that is in the custody or control of the violator.

24 (e) Any person who knowingly, willfully, and for pur-
25 poses of direct or indirect commercial advantage or private

1 financial gain violates section 3(a) shall be subject to criminal
2 prosecution and may be fined, or imprisoned for not more
3 than two years, or both. Fines shall be computed at five
4 times the retail value of the devices, products, or services
5 involved or \$50,000, whichever is greater.

6

EXEMPTIONS

7 SEC. 5. The Secretary of Commerce may issue such
8 rules and regulations as may be necessary to exempt from the
9 requirements of section 3 certain digital audio recording de-
10 vices used exclusively for legitimate business purposes.

11

EFFECTIVE DATE

12 SEC. 6. On and after the expiration of the 36-month
13 period following the date of the enactment of this Act, the
14 provisions of this Act shall be considered to have terminated
15 and of no effect.

○

Senator INOUE. This morning our witnesses will appear in three panels. Our first panel consists of Mr. Jason Berman of the Recording Industry Association of America, and Mr. Charles Ferris, Esquire, of Mintz, Levin, Cohen, Ferris, Glovsky, and Popeo, two very dear friends of mine, Jay and Charlie.

According to my witness list, Jay Berman starts the show.

STATEMENT OF JASON S. BERMAN, PRESIDENT, THE RECORDING INDUSTRY ASSOCIATION OF AMERICA

Mr. BERMAN. Thank you, Mr. Chairman.

My name is Jason Berman. I am the President of the Recording Industry Association of America. I am pleased to have the opportunity to address the members of the subcommittee on the subject of digital audio tape.

DAT poses the most significant technological threat the American music industry has ever faced. At the same time, it offers a significant opportunity for Congress to craft a timely and uniquely suitable legislative response as we enter the next phase of the home taping problem, a problem that, as Senator Gore and Senator Wilson have pointed out, has worsened over time.

Last year, for example, blank tape sales in the United States increased by 21 percent, while record sales declined by five percent. Why? Let me quote an article in the December 20th *Billboard* magazine concerning the then-popular Bruce Springsteen album.

A buyer for a multi-store chain was quoted in the article as saying that the sale of an LP or CD Springsteen set leads "to an almost automatic sale for a multi-pack of blank audio cassettes. Now, it does not take much imagination to figure out what the blank tape is being used for—to record our music.

In fact, if one compares the sales of blank audio tape, 300 million cassettes a year, with the sale of prerecorded music in cassette form, 345 million units last year, they are virtually one for one. For every one we sell, there is a blank tape out there.

I point out, I purchased this in our local record store from Denon, a tape manufacturer: "The most musical cassette tape." Unfortunately, there is no music on it, and if there were no one would be paid for the music on it, only the blank tape manufacturer.

Here is another one. This is by Maxell, and I would like to play this for you, because it says on here that the XL-2 delivers "Top performance pop, rock, jazz, or country music." And now I think we will have an opportunity to find out whether it is rock, pop, jazz, or country music.

[Pause.]

Now, why would anyone go to a store, spend five dollars and change to get that? It defies the imagination. Blank tape becomes valuable only insofar as it takes our music, and the problem is that it takes it for nothing.

The only people who are rewarded are the blank tape manufacturers. Blank tape manufacturers do not support the creation of music.

The equipment and blank tape manufacturers in fact continue to encourage home taping. They urge consumers in their ads: "Beat the system. Save money by copying a friend's cassette, or buy a dual recorder because it quickly pays for itself by turning inexpensive blanks into prerecorded music cassettes."

Or how about this one: "With the abundance of record collections in the dormitory, college is the perfect place to expand a personal music collection by copying a friend's album onto your cassette."

As bad as that situation is, it is about to get a lot worse. Digital audio tape is the tape version of compact disk technology. It is about to be introduced into the United States.

Why do the music industries of the United States, Japan, and throughout the world regard DAT as such a threat? Because with DAT recorders home tapers can make perfect clones of prerecorded music, because DAT eliminates any distinction between originals and copies, so that every copy becomes a new original, the equiva-

lent of a master sound recording, to be copied again and again and again.

And because DAT is only a copying machine, serving no purpose currently other than home taping. At present, for example, record companies cannot offer their prerecorded music for sale on DAT cassettes because there is no commercially feasible high-speed duplication technology for the manufacturer of prerecorded DAT cassettes. Only blank tape will be sold.

Thus, the current generation of DAT machines offers the music industry no new outlets for its prerecorded product, but only another tool for the taper.

Fortunately, the same wizardry that has created machines capable of producing perfect copies can likewise be used to protect it. And I am referring to the copy code technology that allows the creator and copyright owner to control the unauthorized taping of its recording. My colleague, David Stebbings, will explain how the system works and will demonstrate it for you.

For years we have searched for an appropriate solution to the home taping problem. Various proposals for compulsory licenses under which royalties would be paid on audio blank tape and equipment have been around. In fact, last year a Senate Subcommittee of the Judiciary Committee adopted such a proposal.

But our opponents, the very same manufacturers of DAT, have argued that royalties are somewhat broad in scope and impractical to administer, and so we were asked to find a technological solution.

The answer is copy coding. It is a technological solution to a technological problem. It is precisely targeted. Only those who attempt to copy copyrighted music would be prevented from doing so.

Those who tape piano lessons, class lectures, music notes, unprotected recordings—and in that category, I would point out to you that all existing records, tapes, and CD's would be unaffected. This is a totally prospective solution.

It is also a marketplace solution. Once Congress has enacted this legislation requiring the manufacturers and importers to include the scanner in their DAT machines, virtually no further governmental involvement is necessary.

Historically, the copyright law has lagged behind technology, putting Congress in the politically difficult position of trying to stop someone from a particular practice or requiring them to pay for it. In such instances, legal right has always given way to political might.

And that is precisely why the introduction of a new technology such as DAT offers a unique opportunity to anticipate, rather than respond. DAT has the potential to become the predominant recording technology for generations. That means that by acting now Congress can influence the next decade of recording machines in a constructive way.

I used to think all we needed to succeed in international trade was a really good product, and we have such a product. It is called American recorded music, and it is the most sought-after music in the world. But the international competitiveness of this American asset is being diminished, not because creative communities in other countries are producing better music, but because their engi-

neers are producing taping machines that enable others to obtain our music without paying for it.

DAT machines are scheduled to arrive in the United States this summer or fall. Before that time, before a single machine has been sold, the Congress should enact legislation to require the manufacturer to include the copy code scanner in the machine.

Since it is a threat to intellectual property posed by the new DAT technology that gives rise to our fears, it is ultimately intellectual property law that should govern the response. The legislation we seek today does not attempt to devise a definitive solution to either DAT or home taping. Rather, it is intended to provide a breathing period during which the status quo would be maintained.

During that period, home taping as it currently exists will get no better. But insofar as DAT is concerned, it will get no worse. That breathing period will give Congress the time it needs to consider the issue in a more deliberative fashion.

And in fact, the House and Senate Judiciary Committees are about to begin such a task. For now, we are asking only for interim relief, a short term remedy designed to avoid a situation where the machines are here and the tapers are fast at work.

If that were to happen, the law would never have an opportunity to harmonize the interests of the copyright owner with advances in technology.

Mr. Chairman, I would like to read a very brief letter which is on the point raised by Senator Wilson about the supermarket analogy. It is from a member of the American Federation of Musicians, Local 257 in Nashville, and it is called "Food for Thought":

Bill came to Nashville 22 years ago and opened a grocery store. After a few lean years, Bill started making a profit. Now Bill makes a lot of money.

John came to Nashville 12 years ago and started writing songs. After many lean years of working at odd jobs to support his art, John finally had some songs recorded by major stars and was ready to start making a profit.

Bill loved music. He goes to the store and buys Sony tapes, then he tapes the music off his Sony radio onto his Sony tape recorder. He listens to this music all day long. He pays Sony for the music; he does not pay John.

John, like everyone else, has to eat. He goes to Bill's grocery store twice a week and pays Bill a lot of money for food. John pays Bill for each item that he buys. John pays Bill for his food. Bill does not pay John for his music.

Soon John will have to get another job so that he can buy food. John will have to stop writing the music that Bill loves. Bill will be sad, and so will we.

Thank you.

[The statement and questions and answers follow:]

STATEMENT OF JASON S. BERMAN, PRESIDENT, RECORDING INDUSTRY ASSOCIATION OF AMERICA

Mr. Chairman and members of the Subcommittee, my name is Jason S. Berman, and I am President of the Recording Industry Association of America. Our member companies produce and market about 90% of the prerecorded music sold in the United States.

I am pleased to have the opportunity to address you on the subject of digital audio tape, and to solicit your support for the enactment of S.506, a targeted, interim legislative response to the imminent introduction of DAT to the U.S. marketplace.

DAT poses the most significant technological threat that the American music industry has ever faced. At the same time, it offers a significant opportunity—to craft a timely and uniquely suitable legislative response to the home taping problem. Before I elaborate on these points, however, let me first provide you with a little bit of background on the home taping problem generally, so that you can better understand the context in which the DAT issue arises.

THE HOME TAPING PROBLEM

For many years now, millions of people across the country have been taping, rather than buying, prerecorded music. At last count, in 1983, Americans were taping the equivalent of about \$3.8 billion worth of music a year,¹ displacing sales revenues of some \$1.5 billion annually.² That means that more than a third of the record industry's revenues were already being lost to home taping, and with DAT it is only going to get worse.³ People continue to buy massive quantities of blank tape: According to statistics compiled by the Electronic Industries Association, between 1985 and 1986 blank tape sales increased by 21%.⁴ Record sales, on the other hand, declined by 5% during that same period.⁵ In other words, the public is consuming more music than ever; they're just buying less of it.

The equipment and blank tape manufacturers have not hesitated to exploit the capability of their products to copy prerecorded music. Manufacturers and importers of blank tapes advertise that theirs is "the most musical cassette tape," that their tapes are specially formulated for "digital audio music recording," and that their tapes are "for people who want to do some serious taping." One manufacturer urges customers to "take the brilliant sound quality" of compact discs to the beach by taping them onto 90-minute cassettes; another urges tapers to double their "music money rebate" by purchasing extra blank tapes.

Advertisements for taping equipment encourage home taping even more blatantly, especially for the dual-well machines that facilitate the dubbing of prerecorded cassettes. They exhort consumers to "beat the system" and "save money" by copying "a friend's cassette." One advertiser bluntly suggests, "You have friends. Your friends have friends. Why not pool your resources and dramatically increase your cassette collection with the latest in high speed high quality tape duplicators." Still others advise that their dual cassette recorder "quickly pays for itself by turning inexpensive blanks into prerecorded music cassettes. It's like getting the high quality AM/FM stereo for free."

But while the largely foreign manufacturers of blank tape and recording equipment have grown rich off our music, the American music industry, and all who love music, have paid the price. You see, TDK and Maxell do not reinvest their blank tape profits into the creation of more music. It is record companies and music publishers who underwrite the creation of recorded music, and as home taping steadily diminishes the revenues they earn from the records they sell, there has been less money to invest in new artists, new songwriters, new music. In just the last eight years, the amount of new music being released into the market has declined by more than 40%!

But as bad as the situation is, it is about to get a lot worse—unless Congress acts promptly.

THE THREAT OF DAT TECHNOLOGY

There is about to be introduced into this country a brand new technology that will pose a distinct threat to the intellectual property rights of the creative community. This technology, called digital audio tape ("DAT"), is the tape version of compact disc ("CD") technology. Like the CD, it carries sound frequency information in the form of a digital signal. The tape cassettes for DAT machines will be about half the size of the analog audio cassette, yet they will hold up to two hours of music. (Sony is already predicting that a future generation of DAT machines will fit into the palm of the hand, and will offer recording times of four to six hours.)

¹ Audits & Surveys, *Home Taping in America: 1983*, reprinted in *Video and Audio Home Taping: Hearings Before the Subcomm. on Patents, Copyrights and Trademarks of the Senate Comm. on the Judiciary, 98th Cong., 1st Sess.* at 193-224 (1983).

² See Statement of Alan Greenspan Re S. 1739, Before the Subcomm. on Patents, Copyrights and Trademarks of the Senate Comm. on the Judiciary, 99th Cong., 1st Sess. (October 1985).

³ Dr. Alan Greenspan has shown that, each year, home taping has accounted for an increasing percentage of the total hours of recorded music available from both purchase and taping. See Statement of Alan Greenspan Re S. 1739, Before the Subcomm. on the Judiciary, 99th Cong., 1st Sess. at 4-5 (October 1985). Other studies also confirm that home taping of music is growing. See CBS Records, *Blank Tape Buyers: Their Attitudes and Impact on Prerecorded Music Sales* at 10 (Fall 1980); WCI, *A Consumer Survey: Home Taping* at 4-6 (March 1982); both are reprinted in *Copyright Infringements (Audio and Video Recorders): Hearings Before the Senate Comm. on the Judiciary, 97th Cong., 1st & 2nd Sess.* 848-64 (1981 and 1982).

⁴ In 1985, audio blank tape shipments amounted to 245,682,000 units. In 1985, they climbed to 296,681,000 units.

⁵ RIAA Press Release of April 8, 1987. The decline in unit sales is consistent with a long-term trend: Except for two years, unit sales have declined every year since 1978.

Why is DAT such a threat? Because it eliminates any distinction between originals and copies. Because with DAT, every copy becomes a new original, the equivalent of the master recording, to be copied again, and again, and again. And because DAT is *only* a copying machine, service no purpose currently other than home taping.

DAT technology will allow exact duplicates of a digitally prerecorded disc (CD) or tape (DAT)⁶ to be made simply by transferring the digital signal onto a digital audio tape. The nature of this transmission ensures that there will be no loss of sound quality due to dust, needle or hardware noises. One need only compare the DAT to the brilliant sound quality and lasting durability of the CD to imagine the high quality of sound that these copies will have. Because DAT recorders eliminate the distinction between originals and copies, the combination of CDs and DAT machines will provide home tapers with a perfect master and a copying medium that allows infinite duplication of perfect copies. This means that the thousandth generation of a DAT tape will be identical to the CD from which the first copy was made.

DAT will also significantly improve the quality of analog-to-digital home copying. Unlike existing analog recording, which experiences a loss of sound quality every time a new generation of copies is made, DAT will capture and preserve analog recordings with perfect fidelity. Moreover, subsequent copies of that DAT recording will perfectly replicate the original, with no degradation of sound quality. As the legal adviser to the London-based International Federation of Phonogram and Videogram Producers explains it, if a consumer with a legitimate tape made copies for two friends who each made copies for two more friends, "within 25 days you could provide the whole of the U.K. with a perfect copy."⁷ As the *Dempa Digest*, a Japanese electronics newsletter, recently pointed out, "copies are the next best thing to direct-digital."⁸

It is inevitable that the principal impact of DAT technology will be to further reduce sales of prerecorded product. At present, record companies cannot even offer their prerecorded music for sale on DAT cassettes, because there doesn't exist a commercially feasible high-speed duplication technology for the manufacture of prerecorded DAT cassettes.⁹ Only blank DAT cassettes will be sold. Thus, the current generation of DAT machines offers the music industry no new outlet for its prerecorded product—but only another tool for tapers who wish to avoid having to buy CDs. This is of no concern to the Japanese equipment manufacturers, of course. As the *Dempa Digest* has explained, "the lack of pre-recorded software is not the hindrance for DAT that it was for CD because of the dubbing capabilities of the new recorders. This allows users to quickly build up a tape library. . . ."¹⁰ This view was echoed just recently by Bob Garcia, General Manager of the audio division of Sharp Electronics, who was quoted as saying that the absence of prerecorded software would not "be that much of a hindrance because of the recording capabilities of the unit."¹¹

⁶ We understand that the DAT recorders that have just been put on the market in Japan utilize a different sampling frequency for playback than recording, theoretically preventing digital-to-digital copying. In fact, however, there is nothing to prevent DAT hardware manufacturers from producing DAT machines which utilize the same sampling frequency for recording and playback. At various audio fairs, Hitachi and Sharp exhibited prototype DAT machines that are capable of such digital cloning. Nor is there anything to prevent the use of a frequency converter—the technology for which already exists—which will synchronize the frequency sampling rates of players and recorders. The chip for such frequency sampling rate converters is available for sale right now in the Sony catalog.

The Japanese electronics manufacturers also claim that their DAT machines will not be capable of digital-to-digital copying because of a digital flag code in copyrighted musical recordings on CD. Unfortunately, however, such a code is easily defeated—by the use of a simple computer program and inexpensive semiconductor chips, or by the use of a "black box" (probably for under \$50) that would eliminate the flag code.

In any event, these DAT machines do not limit digital-analog-digital copying. Such copying produces copies that are barely distinguishable from direct-input, digital-to-digital copies, and are therefore of just as much concern to the American music industry.

⁷ *Asian Wall St. Jnl. Weekly*, March 2, 1987.

⁸ *Dempa Digest*, February 23, 1987 at 3.

⁹ The only technology for the manufacture of prerecorded DAT cassettes that now exists requires that cassettes be duplicated in "real time"—in other words, it takes 40 minutes to duplicate a cassette containing 40 minutes of prerecorded music. This may be sufficient for the handful of small record labels that have indicated an intention to market their recordings on DAT, because the audience for their repertoire is relatively limited. It would not be possible, however, to fulfill the demand for mass-market recordings without high-speed duplication technology.

¹⁰ *Dempa Digest*, February 23, 1987 at 4.

¹¹ *Variety*, April 29, 1987 at 141.

In short, DAT technology has the potential to cause the home taping problem to escalate completely out of control. As Fumio Ohta, a Toshiba Corporation executive vice president, admitted to the *Asian Wall Street Journal Weekly*, "Home taping is the life of the market. To be able to record is a big drawing point. At the same time, [home taping] is a threat to the market" for music.¹² And as Donal J. Quigg, Assistant Secretary of Commerce and Commissioner of Patents and Trademarks, testified before the Senate Judiciary Committee last year on behalf of the Reagan Administration, DAT technology "can only be expected to provide greater incentives to home copies, with a corresponding adverse impact on copyright owners."¹³

Finally, DAT can only exacerbate the problem of commercial record piracy throughout the world. For the first time, even Mom and Pop piracy operations will be able to produce cassettes that sound as good as the genuine product.

These are just some of the reasons why the anticipated introduction of DAT has struck fear into the hearts of the music industries throughout the world—fear that the practices of home taping and record piracy will become even more widespread as tapers and pirates gain the ability to produce their own master-quality recordings.

"COPY-CODING"—THE TECHNOLOGICAL SOLUTION

Fortunately, the music community need not be rendered helpless in the face of this new and sophisticated technology because the same wizardry that has produced machines capable of appropriating our musical recordings can likewise be used to protect them.

A new engineering device called "copy-coding" provides a practical and fair way to compensate those who create and produce musical recordings for the sales they lose when people tape their music rather than buy it. I will leave it to my colleague, David Stebbings, to explain how copy-coding works. But first let me explain why we regard copy-coding as such an attractive solution.

First, it is targeted: only those who attempt to tape encoded musical recordings would be prevented from doing so under this approach. Those who tape piano lessons, class lecture notes or unprotected recordings (as well as all existing records, tapes and CDs) would remain untouched by this technological advancement because copy-code scanner chips would not interfere with such uses of DAT machines. The scanner chips would do but one thing—enable us to protect future versions of our copyrighted recordings.

Second, copy-coding technology is a marketplace solution. Once Congress has enacted legislation requiring manufacturers and importers to include copy-code scanners in their DAT machines, virtually no further governmental involvement would be necessary. Instead, in the best tradition of our economic society, the marketplace—not the government—would take over.

In the free market, creators and copyright owners would be able to make their own, individual determinations about how best to respond if there is a consumer demand for "copiable" recordings—i.e., recordings that are not encoded or notched to prevent copying. At present, the person who buys a prerecorded cassette for his own listening pleasure, never to be copied for anyone else, has to pay the same price as the person who buys that same cassette with the intention of supplying copies of it to others.

This need no longer be the case with copy-coding. With this new technology, producers would be able to distinguish between these different classes of customers and consumers could choose the type of recording they want. A copiable version would have included in its price compensation for the artists, songwriters, musicians and copyright owners whose music is being taped. The person who does not wish to copy could buy the less expensive "uncopiable" version.

At least one record company has already announced its intention to market both copiable and uncopiable versions of its records, just as many software publishers right now market both copiable and uncopiable versions of their computer programs. Many other record companies can be expected to adopt similar policies. Those policies, like the value of the right to copy, would be established not by the government, but by the competitive marketplace.

The Reagan Administration, after very careful analysis, has strongly endorsed the copy-code system. Commissioner Quigg, in his testimony before the Senate last year, described copy-coding as "the best approach for solving the [audio home taping]

¹² *Asian Wall St. Jnl. Weekly*, March 2, 1987.

¹³ Statement of Donald J. Quigg on S. 1739 Before the Senate Committee on the Judiciary, 99th Cong., 2d Sess., at 3 (August 4, 1986).

problem,"¹⁴ and one that was particularly appropriate for the new DAT technology.

We couldn't agree more. The copy-code approach offers an attractive solution to the home taping problem generally; but applied to the new DAT machines, it offers a once-in-a-lifetime opportunity.

THE LEGISLATIVE OPPORTUNITY PRESENTED BY DAT

The introduction of a wholly new technology such as DAT offers Congress a unique opportunity—to *anticipate*, rather than respond to, technology. DAT has the potential to be the predominant recording technology for generations to come. That means that, by acting now, Congress can influence the next several decades of recording machines in a constructive way.

The legislative response we support is contained in S.506, the Digital Audio Recorder Act of 1987, sponsored by Senators Gore, Wilson, Cranston, Kerry and D'Amato. This legislation would require that digital audio recording devices transported in commerce contain a copy-code scanner, an electronic circuit built into the recording mechanism which causes the device to stop taping when it detects a certain signal encoded in recordings. (A brief description of the legislation is attached to this statement.) I should emphasize that the requirements of S.506 would remain in effect for only three years, during which time Congress can more fully consider the DAT problem and the appropriate long-term solution. Of course this very targeted legislation will not solve the entire home taping problem; but it will at least help curb the problem for the future. Congress should take advantage of this rare opportunity to write on a clean slate; and to learn from experience by applying the lessons of analog home taping to the new digital technology before history repeats itself.

Moreover, this legislative opportunity extends beyond our borders to the home taping problem encountered around the world. We have a rare opportunity to exert a positive influence on the legislative treatment of this next generation of recording technology. As the world's leading exporter of music, it is natural for other nations to look to the U.S. to see how it protects its own creative community. Our failure to act on DAT will be perceived as a signal that American music is fair game for poachers throughout the world.

Our failure to act would also be inconsistent with the trend in other nations to protect intellectual property rights in music. Nearly a dozen other countries have adopted royalty systems to deal with the home taping problem. Now the EEC is considering the use of the CBS copy-code system to respond to the new generation of digital machines. Representatives of the Commission have already informally notified MITI (the Japanese trade ministry) that they are likely to require the installation of copy-code scanners in all DAT machines manufactured in, or imported into, the Common Market. The concurrent consideration of a common approach by both the Europeans and the Americans offers an invaluable opportunity to forge a worldwide consensus on a truly international problem. The Congress should not pass up such an opportunity.

THE TRADE IMPLICATIONS OF DAT

The advent of DAT machines not only impinges upon the intellectual property rights of creators and owners, but it affects the U.S. balance of trade as well. I used to think that all you needed to succeed in world trade was a really good product. We have such a product—it's called American music, and it's the most sought after music in the world. From Billy Joel to Huey Lewis, from Benny Goodman to Alabama, our music is heard literally around the world. With an export product like that, you would think that America's music industry would be among the most competitive in international trade.

But its competitiveness is being hurt—not because the creative community of other countries is producing better music, but because their engineers are producing taping machines that enable our customers to obtain our music without paying us for it.

Just as most of the premium blank tape and recording machines now used for the home taping of music originate in Japan, so will DAT tapes and machines likewise come from Japan. (I know of no American companies that are planning to manufacture these devices.) It is these foreign hardware manufacturers who now benefit from the home taping of our prerecorded product and it will be these same manu-

¹⁴ Statement of Donald J. Quigg on S. 1739 Before the Senate Committee on the Judiciary, 99th Cong., 2d Sess., at 11 (August 4, 1986).

facturers who will be enriched in the future if DAT machines are allowed to cause the home taping problem to escalate to even more massive proportions.

With DAT, the Japanese electronics industry will continue to increase its profits at the expense of American creators and producers of music. Meanwhile, the American music industry—one of the few American industries that returns a positive trade balance to the United States—continues to lose revenues and becomes less able to offer a diverse variety of musical recordings. Consequently, the new music available to the public and the quantity and variety of musical export products will diminish. The end result will be further weakening of yet another American industry.

That is why the Reagan Administration included a DAT provision in its "Competitiveness Initiative"—so as to preserve the competitive vitality of the American music industry. The lobbyists for the Japanese electronics companies contend that DAT isn't really a trade issue, yet the Japanese government itself appears to regard it as such. Delegations from MITI have been sent to the U.S. to discuss the problem with USTR, and the Japanese electronics industry has poured seemingly limitless resources into its effort to defeat any legislative proposals on DAT. Obviously they believe this issue to be of great economic consequence to their trade opportunities in the U.S.

Moreover, within its own borders the Japanese government treats issues like this one as simply another element of its trade policy—i.e., to protect the interests of Japanese industries without regard to the interests of other nations' industries. For example, when the Japanese adopted legislation in 1985 to control the commercial rental of records, they extended the protection only to Japanese recordings. They refused to extend the benefits of their legislation to American recordings.¹⁵ Clearly, the Japanese are not looking out for the interests of American industries; only the U.S. Congress can protect the American music industry.

Remember, finally, that the DAT issue is not a question of free market competition. The Japanese machines do not write better songs; they simply copy our songs and thereby displace American sales. They offer no new opportunity for America's music community to sell its wares; they offer only the capability to copy the music we had hoped to sell.

The Japanese DAT manufacturers must be told, in no uncertain terms, that their parasitic practices cannot continue. The United States should not put itself in the position of providing a market for their new technology until and unless these machines are equipped with technological protections for American creators.

THE NEED FOR PROMPT LEGISLATION

The DAT machines will be arriving in the U.S. market as early as this summer or fall. Before that time, before a single DAT machine has been sold, the Congress should enact S.506 to require hardware manufacturers to install copy-code scanners in DAT machines that are shipped in interstate commerce.

Prompt approval of this legislation will send the Japanese electronics manufacturers a much-needed message—that their continued disregard for American intellectual property will no longer be tolerated.

It is important to note that, since it is the threat to intellectual property posed by the new DAT technology that gives rise to our fears, it is ultimately intellectual property law that should govern the response. The legislation we seek, therefore, does not attempt to devise the definitive resolution of either DAT, or home taping. Rather, it is intended to provide a three-year breathing period during which the *status quo* will be maintained. During that period, the home taping problem as it currently exists will get no better; but at least, insofar as DAT is concerned, home taping will not get any worse. That breathing period will give the Congress the time it needs to consider the issue in a more deliberate fashion, and craft a comprehensive solution to the problem.

For now, we are asking only for *interim* relief, a *short term* remedy designed to avoid the permanent foreclosure of the technological solution to the DAT problem. But prompt action is critical. Any further delay in responding to the introduction of DAT machines will only play into the hands of the Japanese electronics industry. That is why we urge Congress to act *now* on S. 506 to require copy-code scanners in DAT machines.

¹⁵ By contrast, the Record Rental Amendment enacted by the U.S. Congress in 1984 imposed no similar restriction in U.S. law, but extended the benefits of that legislation to all copyright owners regardless of nationality.

CONCLUSION

It is difficult and frightening to imagine our country without the beautiful sounds emanating from the American music community. We take for granted our position in the world music market and continue to deceive ourselves into thinking that our musical products will always be abundant and coveted by the rest of the world.

We must not forget that a national treasure—our music industry—can be lost if we do not protect it through our laws. The Congress now has the opportunity to do so, to pave the way for the continued production of diversified music, to devise new laws under which advances in technology can be reconciled with the reasonable needs of our intellectual property community. By doing so, the Congress would be looking to the future in protecting not only the interests of music creators and producers, but those of listeners and lovers of music everywhere.

The prompt enactment of the interim approach set forth in S. 506 is vital to the preservation of the American music industry. We strenuously urge your support.

SUMMARY OF THE DIGITAL AUDIO RECORDER ACT OF 1987

Section 3(a) of the Digital Audio Recorder Act of 1987 makes it unlawful to manufacture, assemble, or offer for sale, resale, lease, or distribution in commerce (1) a digital audio recording device that does not contain a copy-code scanner or (2) any device, product, or service that renders inoperative a copy-code scanner. Section 3(b) makes it unlawful to render inoperative a copy-code scanner. A copy-code scanner is an electronic circuit built into the recording mechanism of an audio recording device which causes the device to stop taping when it detects a certain signal encoded in recordings.

Under Section 4(a), any person aggrieved by a violation of the Act, or an appropriate officer or agency of the United States, may bring a civil action in district court. The language of Section 4(a) is a typical "standing" provision intended to provide a remedy for anyone harmed by a violation, including songwriters, artists, music publishers, record companies and even competing manufacturers of digital audio recorders. Under Section 4(b), an aggrieved party may elect either the actual damages suffered as a result of the violation or an award of statutory damages.

Section 4(b)(2) gives the court discretion to determine the amount of statutory damages. The minimum award has been set at \$1,000 to provide a sufficiently strong deterrent to violators and an equally strong incentive to private enforcers. The maximum award has been set at either (A) \$10 multiplied by the number of devices or products involved in the violation or (B) two times the cumulative retail value of the services involved in the violation, to provide a remedy that corresponds to the severity of the violation.

Section 4(c) allows criminal prosecution for violations of Section 3(a) that are committed knowingly, willfully, and for purposes of direct or indirect commercial advantage or private financial gain. No criminal liability attaches to an individual who bypasses, removes, or deactivates a copy-code scanner in violation of Section 3(b).

Section 5 authorizes the Secretary of Commerce to issue such rules and regulations as may be necessary to exempt certain digital audio recording devices from the requirements of the Act. Under such exemptions, businesses with a legitimate need (such as manufacturers of prerecorded DAT cassettes or radio stations) may obtain recording devices without copy-code scanners.

Section 6 provides that the Act shall remain in effect for a period of three years.

RECORDING INDUSTRY ASSOCIATION OF AMERICA, INC.,
Washington, DC, June 12, 1987.

Ms. TONI COOK,
Counsel, Senate Commerce Committee, Subcommittee on Communications, Hart
Senate Office Building, Washington, DC.

DEAR TONI: Enclosed please find our responses to the Subcommittee's questions from the hearing on May 15.

I look forward to meeting with you soon to review the next steps for this legislation.

Regards,

HILARY B. ROSEN,
Vice President, Government Relations.

Enclosure.

SENATE COMMERCE COMMITTEE QUESTIONS

Question 1. Mr. Berman, many of the arguments you have presented against digital audio tapes (DAT) are similar to those presented by the movie industry in connection with efforts to restrict the sale of video cassette recorders (VCR). The movie industry proved to be wrong about the economic consequences of the VCR. There is now a \$5 billion industry in the sale of prerecorded video tapes. Why should DAT be any different?

Answer. One extremely important difference between what we foresee in the area of DATs and what has happened in the video industry is that we have no technology for the mass production of prerecorded DAT cassettes. The recording industry cannot have any market in the sale of DAT cassettes until we are able to produce them for sale to the mass market.

Moreover, we recognize in the question the argument that home taping in general, and DAT home taping in particular, will eventually redound to the industry's benefit because it will increase interest in prerecorded music. But the DAT machines that the foreign manufacturers are so eager to begin importing into the United States can be used for one purpose only: the unauthorized duplication of copyrighted music. To some extent, even the Japanese government and the DAT manufacturers have recognized the grave damage that DAT machines could do to American music if steps are not taken to protect copyrighted musical recordings. It is illogical to suggest that technology that serves the sole purpose of copying copyrighted music, and displacing record sales, will somehow boost sales.

Question 2. Mr. Berman, it has been reported in the press that some record companies and retailers are considering what would amount to a boycott of a manufacturing of prerecorded tape for DATs if some sort of legislation is not passed. Is this report correct?

If so, what effect would this have on consumers and competition?

Answer. I know of no such boycott.

Record companies are quite naturally extremely concerned about the home taping problem, and especially concerned about the potential of DAT technology to escalate the home taping problem completely out of control. Some of our companies, individually, may have arrived at business decisions not to invest in the introduction of a new format until they can be reasonably certain that its profitability will not be undercut or destroyed by DAT home taping. Such decisions are completely up to our individual members.

Quite apart from all that, it makes no sense to attribute such sinister motives to our members in light of the fact that, as described above, there presently exists no technology for the mass marketing of prerecorded music on DAT cassettes.

Question 3. Mr. Berman, in your testimony, you state that record industry sales have declined five percent between 1985 and 1986. Does that figure include sales from prerecorded audio tapes and compact discs (CDs)?

Answer. Yes. The five percent figure reflects a decline in unit sales overall, for all the formats in which prerecorded music is released: singles, LPs/EPs (Extended Play), CDs, cassettes, and 8-track cartridges.

Question 4. Mr. Berman, can you provide me with the total revenue figures for record companies from the sale of prerecorded audio tapes and CDs for the years 1985 and 1986?

Answer. In 1985, the manufacturers' dollar value, at suggested list price, of units shipped of CDs was \$389.5 million; of prerecorded audio tape cassettes was \$2,411.5 million; and of 8-track cartridges was \$25.3 million, for a total of \$2,826.3 million.

In 1986, those figures were \$930.1 million, \$2,499.5 million, and \$10.5 million, respectively, for a total of \$3,440.1 million.

In both cases, the totals do not include singles and LP sales.

Question 5. Mr. Berman, can you tell the Committee the number of dual-well tape machines sold in the United States in 1985 and 1986?

Answer. In 1985, manufacturers of tape recording equipment sold 1,373,733 dual-well tape recording machines in the U.S.

We do not have the figure for 1986.

Question 6. Mr. Berman, please explain why record companies reported such high profits in some cases as much as 50%, in 1986?

Answer. The recording industry is a volatile business. We have good years and bad years. In 1986, several companies were fortunate enough to have experienced a good year. But that is only one of many years, and there is no assurance that the industry will continue to do well.

I must also caution that attention focused on the profit reports of a few successful record companies may tend to give an exaggerated impression of how the industry

is doing overall. Although several companies are doing well, many others are doing poorly. Those that are doing well credit their success largely to the popularity of CDs, which are a profitable product. This is a fortunate development, considering that unit sales are down throughout the industry due to home taping.

Finally, I must emphasize that the basic issue here has to do with the principles of intellectual property. The profitability or nonprofitability of the music industry is irrelevant to the need for this legislation: however significant it may be under some economic systems, a person's entitlement to compensation for the use of his copyrighted property is not, under our system of law, based on a means test. This legislation is necessary because home taping displaces sales of prerecorded music; that displacement deprives the creators and producers of the music of the compensation of which they are entitled; and the loss of compensation serves as a disincentive to the creation and production of more music, especially that music whose profitability is most marginal, such as that by new artists or that which appeals to smaller audiences.

The success of a handful of companies in our industry should not be used to distract attention from the real issues involved here. Nor should it provide the basis for an argument that because a few companies are doing well, it is all right to appropriate the industry's product without paying for it. The Japanese manufacturers of DAT recorders, analog tape recorders, and blank tape, who have experienced vast commercial success in recent years, have never been expected to give away their products for free.

In good years or bad, these equipment manufacturers enjoy patent, trademark and copyright protection. Even in those years when an industry's profits might be reasonable, or even high, their property rights should not be diminished. No other industry or business is expected to live with a cap on its earnings potential, or to be the butt of criticism for asserting its right to achieve that potential. The recording industry should not be signaled out for such unfair treatment.

Question 7. Mr. Berman, in your testimony you state that record companies have indicated that if this legislation is passed, record companies can be expected to release two versions of records, those that can be copied and those that cannot. Has this proposal been discussed with retailers?

Would that proposal strain retailers who would be forced to carry two sets of inventory and maybe eliminate less popular artists?

Answer. RIAA has not undertaken discussions with retailers regarding the sale of copiable and uncopiable versions.

We assume some record companies would offer two versions if there were marketplace interest and consumer demand for two versions. It would likewise be logical to assume that retailers' decisions about whether to offer two versions to their customers would also be governed by marketplace conditions and consumer demand. We assume, in other words, that business people at all levels of the production and distribution chain will do what is most profitable. If that entails offering two versions of musical recordings, then we assume they will be guided by that information.

It should be noted that, for many years, retailers of prerecorded music have routinely carried sizable inventories of music offered in multiple configurations: mono and stereo, 78's, 45's, and 33's, cartridges and reel-to-reel tapes, and now singles and LPs, cassettes and CDs. They have also stocked and offered to the public numerous varieties of blank tape, which also amounts to a dual or multiple inventory system. Thus, record retailers are certainly accustomed to offering merchandise in multiple configurations, without experiencing any insurmountable difficulties, or sacrificing variety in what they offer the public.

Question 8. Mr. Berman, under current copyright law, it is not apparently illegal to copy prerecorded music for private use. Therefore, on what legal basis can we justify the requirement that manufacturers of DATs include the proposed copy-code scanner system?

Answer. We do not agree with the supposition that copying for "private use" is not illegal under current copyright law. The Copyright Act of 1976 names several specific exceptions to the author's exclusive rights of reproduction, adaptation, distribution, performance and display, but audio home taping is not among them. To the contrary, Section 114 expressly states that the owners of copyrighted sound recordings have the exclusive right to "duplicate the sound recording"

The claim that the Copyrighted Act contains such an exception rests upon a single passage in the House Judiciary Committee's report on the Sound Recording Amendment of 1971. That statute extended copyright protection to sound recordings; it was addressed to the problem, of commercial record piracy. Additional comments on the home recording issue were made in hearing testimony and on the floor of the House. For two reasons, these isolated referenced to home recording in

the 1971 proceedings do *not* rise to the level of establishing and implied home taping exemption under the 1976 Copyright Act.

First, the 1971 Amendment itself contained no home recording exemption. There was absolutely *no* mention of home recording in the Senate deliberations over the 1971 statute. Thus, there is no justification for inferring a congressional intent to create an audio home taping exemption either from the 1971 Amendment or its legislative history.

Second, and even more significant, the House references to home recording pertained to a statute that was repealed by the comprehensive revision of the copyright law in 1976. The current legal status of audio home taping must be determined pursuant to the Copyright Act of 1976—not pursuant to the obsolete 1971 Amendment or its legislative history. As already noted, the 1976 Act does not contain any exemption for audio home taping beyond the potential defense of fair use. Indeed, the legislative history of the 1976 law incorporates verbatim much of the language contained in the House report accompanying the 1971 Amendment—but it omits entirely the passage referring to home recording. As the late Professor Nimmer concluded, "[e]ven if . . . [there were] a home-use exemption in the 1971 Amendment, there is no suggestion in the legislative history that the 1976 Act incorporated a similar exemption." Nimmer, "Copyright Liability for Audio Home Recording: Dispelling the *Betamax* Myth," 68 Va. L. Rev. 1505, 1516 (1982).

The only basis for exempting home taping from the provisions of Section 106 would be the fair use doctrine, addressed in Section 107 of the copyright law. The doctrine, of fair use immunizes certain uses of copyrighted works from infringement liability, based upon a consideration of four statutory factors. They are: (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.

None of these factors, however, justifies the conclusion that home taping of copyrighted sound recordings should be considered a fair use.

First, home taping is a commercial use within the meaning of the "fair use" provisions despite the fact that the home tapper may not sell his or her copies. The Supreme Court has said: "The crux of the profit/nonprofit distinction is not whether the sole motive of the use is monetary gain but whether the user stands to profit from exploitation of the copyrighted material without paying the customary price." The nation's foremost copyright scholar, the late Professor Nimmer, agreed: "The individual who engages in audio home recording may not be seeking a commercial advantage by selling the recordings, but for fair use purposes his motivation is nevertheless commercial. By engaging in audio home recording, he avoids the cost of purchasing records or prerecorded tapes."

Second, copyrighted records and tapes are sold for the purpose of entertainment. The home tapper seeks to use the copyrighted work for the same purpose. As a U.S. Court of Appeals put it, "a finding that the alleged infringers copied the material to use for the same intrinsic purpose for which the copyright owner intended it to be used is strong indicia of no fair use."

Third, home tappers record entire musical selections. This is not a question of copying excerpts or a few selected passages. The appropriation of the copyrighted work is total.

Fourth, as the economic effect of copying on the potential market for the copyrighted work grows more severe, the defense of fair use cannot be invoked. The studies, market statistics, and economic analysis of the home taping problem vividly document home taping's adverse effect on sales of records and prerecorded tapes. The displaced sales, lost because of home taping, cost the recording industry \$1.5 billion annually. As Professor Nimmer stated in his article (at p. 1524):

These studies merely confirm what is empirically obvious: audio home recording does have a devastating impact on the market for music and sound recordings. If this fourth factor is ever to militate against application of the fair use defense, it must do so in the case of audio home recording.

In testimony before Congress, Donald J. Quigg, Assistant Secretary of Commerce and Commissioner of Patents and Trademarks, agreed with this assessment. He stated that the sheer magnitude of the home taping problem, that is, its aggregate commercial impact on the marketplace, takes it completely out of the domain of fair use.

A separate consideration sometimes cited in support of the fair use defense is that audio taping occurs in private homes. As Professor Nimmer emphasized, however, this does *not* make home taping a fair use:

If given conduct is unlawful—such as child abuse, for example—the fact that the conduct occurs in the privacy of the home may make it difficult to enforce the law Yet this does not make child abuse in the home lawful. Likewise, enforceability and privacy problems may deter civil copyright infringement actions for audio home recording, but that in itself does not make such recording fair use.

Thus, there is no personal use exemption, nor any fair use immunity to home taping. Contrary to the premise of the question, there is no distinction between commercial and personal home taping.

Nor did the Supreme Court's "Betamax" decision legalize audio home taping. In the "Betamax" case, the U.S. Supreme Court decided only that the sale of *video* recording equipment is not a contributory copyright infringement. The Court "express[ed]" no opinion" concerning the legality of *audio* home taping. The Court's ruling was predicated upon two crucial factors: *first*, that the primary use of VCRs was for time-shifting, and *second*, that video time-shifting constituted "fair use" largely because the plaintiffs were unable to demonstrate a likelihood of actual or potential harm.

The facts of audio home taping are quite different, of course. There is no time-shifting in audio taping; taping records is a substitute for buying records. As a result, the music industry is losing more than \$1.5 billion in sales each year. Thus, there is no question that audio home taping is causing significant harm right now to the American music industry.

Finally, regardless of whether home taping is considered legal or illegal under existing law, Congress may properly act on DAT legislation. The issue posed by DAT machines is before Congress because home taping has become an enormous problem for the American music industry, and DAT machines will only make the problem worse. Congress should therefore enact legislation to protect American music creators and producers regardless of whether home taping is an unlawful practice under current law.

Question 9. Mr. Berman, if the proposed legislation is adopted and it is subsequently determined that no legislation concerning the private copying of prerecorded music is appropriate, we will have a group of consumers that have purchased a DAT machine with a scanner system who will have wasted their money. Do you believe this is fair?

Answer. We do not agree with the conclusion that consumers who have bought DAT machines that contain copy-code scanners will have "wasted their money." If it is subsequently determined after passage of this legislation that it is not appropriate to legislate on the subject of private copying of prerecorded music, there would be no reason to encode copyrighted music. Therefore, owners of DAT machines, even those that contain copy-code scanner chips, would be able to copy any prerecorded music available in the marketplace.

Beyond that, it should be pointed out that even if the legislation was enacted, all existing prerecorded music would be copiable. This is a totally prospective solution.

Question 10. Mr. Berman, if this legislation is passed and the sunset provision is later eliminated, in effect, musicians will have unlimited copyright protection, unlike current copyright law. Is this the intention of the legislation?

Answer. The proposed legislation is not intended to extend the term of copyright protection beyond that recognized by statute. We do not believe that it would have this effect. The maximum term of copyright protection is the life of the creator plus 50 years, or, in a case of work for hire, 75 years. Although compact discs are durable, it is unlikely, as a practical matter, that the encoding of musical recordings will have the effect of extending the generous copyright terms already provided in the statute.

Question 11. Mr. Berman, what would be the effect of this legislation on people who purchase DAT machines but do not make copies of prerecorded music?

Answer. The legislation will have no effect on those who purchase DAT machines and do not make copies of prerecorded music. The copy-code scanner technology controls the unauthorized taping of copyrighted prerecorded music *only*. Owners of DAT machines who wish to copy other, noncopyrighted materials will be absolutely free to do so.

Question 12. Mr. Berman, why should we adopt this legislation focusing on the DAT when you are clearly concerned with the overall taping issue?

Answer. The DAT technology is one facet of the home taping problem. Without diminishing the magnitude of the home taping issue overall, we think it is fair to say that the threat posed by the imminent arrival of DAT machines in the U.S. market is the most serious aspect of the problem we have yet confronted.

We maintain our position that congressional action is required to address the home taping problem overall. But we believe that the seriousness of the threat posed by DAT, which threatens to let the home taping problem grow completely out of control, warrants congressional action now.

Congress is in a unique position to act with respect to DAT, by adopting a technological solution that *anticipates* the introduction and penetration of this new technology into the U.S. market. This is in contrast with the overall analog taping problem, with respect to which consumer practices and expectations are largely already established.

What we are seeking in this legislation is a temporary hold harmless period. During that period, the copyright issue can be addressed. If the machines were to be imported first, the politics of the legislative process could not accommodate any change in copyright law.

Question. 13. Mr. Berman, would you be as concerned about DATs if they were manufactured in the United States?

Answer. The question is hypothetical since there are no United States manufacturers of DAT machines. But if there were such manufacturers we would be as concerned about the effect that their machines would have on our nation's music as we are about the effect of foreign-manufactured machines. This is because the sale of U.S.-manufactured machines would have the same effect of displacing record sales as would the sale of foreign-manufactured machines.

The proposed legislation reflects the consistency of our position in this regard, hypothetical though the existence of U.S. manufacturers may be. The proposed legislation outlaws commerce in DATs that do not contain copy-code scanners. "Commerce" includes, as defined in the bill, *interstate* commerce as well as commerce with foreign nations and would have the effect of requiring the hypothetical U.S. manufacturers of DATs to include copy-code scanners in their products.

Question. 14. Mr. Berman, is the price of records higher today because of audio taping?

Answer. I do not think that home audio taping has yet had the effect of raising record prices. In fact, so far, it has had the effect of *depressing* record prices. When we compare the consumer price index (CPI) with recent trends in record prices, we see that record prices have not increased at the same pace as the CPI. This is in contrast to the same comparison made before the advent of home taping, when record prices closely following the upward pace of the consumer price index.

The basic fact remains, however, that home taping is a substitute for the purchase of prerecorded music. So long as consumers are able to get music for free by copying it, many of them will do so. This will continue to have a severe impact on recorded revenues, and eventually the volume of sales of prerecorded music will not be high enough to recover the fixed costs of production. At that point, recorded companies will have no choice but increase the unit price of prerecorded music. This, of course, would be unfair, because those who buy prerecorded music will have to pay more because others tape their music instead of buying it. This will also put record companies in the untenable position of raising their unit prices, without any resulting increase in profitability, notwithstanding that such a price hike would likely increase the attractiveness and incidence of home taping. This confirms that there is no viable marketplace response to the home taping problem: legislation is necessary.

Question 15. Mr. Berman, as you know Personics Corporation makes specialized tapes for consumers, at the retail level and compensates the copyright holder. This seems to be an example of the marketplace working to solve the problem. Why should we legislate in this area before we determine whether the market can resolve the issues?

Answer. The question refers to a service provided by the Personics Corporation whereby a consumer can buy a customized tape that contains an anthology of songs selected by the consumer. A fee is charged for each song selected. The fee includes compensation for the copyright holder.

It is hoped that this service will satisfy a demand for this kind of copying from at least some segment of the consuming public. We do not believe, however, that it will stop, or even seriously diminish, home taping.

We support the idea of finding marketplace solutions to the home taping problem. We have explored in our industry many marketplace-oriented solutions and have restated numerous times our willingness to discuss with the manufacturers solu-

tions that would allow the marketplace to work the problem out. We remain willing to do so.

We spent a good part of last year discussing the idea of a royalty system that would allow copyright holders to be compensated for the privilege of duplicating their copyrighted works. The Home Recording Rights Coalition, which opposed the copy-code scanner solution, vehemently opposed the imposition of royalties. Thus, while we have been continually willing to discuss any and all viable solutions to the home taping problem, our opponents have been unwilling and uncooperative.

Senator INOUE. Thank you very much.

Mr. Ferris.

STATEMENT OF CHARLES D. FERRIS, COUNSEL, REPRESENTING HOME RECORDING RIGHTS COALITION

Mr. FERRIS. Thank you, Mr. Chairman, members of the committee.

I represent the Home Recording Rights Coalition, which is comprised of companies that are involved in the manufacturer, sale, and distribution of audio cassette recorders. Members of our coalition include the Ampex Corporation, Curtis-Mathis, General Electric Company, International Jensen, Inc., Kenwood Electronics, Sears Roebuck Company, Sony Corporation of America, the 3M Company.

And our membership includes many prominent trade associations, including consumer groups, including the American Council of the Blind, the Car Audio Specialists Association, the Electronics Industry Association of America, the National Retail Merchants Association.

I just wanted, Mr. Chairman, to give a representative sample of the members in our coalition, because after some of the earlier remarks some might assume that I was sitting up here wearing a kimono today. These are all American companies that make a tremendous contribution to the America economic scene. The electronics industry, consumer electronics industry in this country, contributes about \$40 billion to the America economy.

I would like, Mr. Chairman, if I could, to have my prepared statement inserted into the record, and I would just attempt to extemporaneously summarize what I think are the main points that are in that testimony.

First of all, Mr. Berman took out a blank tape and put it into the recording/playback machine and said it does not play any music. I have a tape which has prerecorded music on it, and you put it up to your ear you cannot hear anything on that tape.

You need those recording/playback machines over there to hear that prerecorded music, and it is the technology that has been provided by the hardware manufacturers that has provided tremendous opportunities and well-deserved opportunities the recording industry and the members of the creative community so that they may reach millions of Americans who otherwise would never be able to hear their creativity and their art.

So there is a synergy between the hardware manufacturers and the software manufacturers. Historically it has been that way.

We have heard Examples to other technological displacements, as when the talking movies put out of business the piano players in the silent theaters. Well, that happens when new technology comes on, but the general public is benefited significantly by the wider

reach of the creativity that comes to those that do create. I think we have to keep that in mind.

The DAT sits over there, Mr. Chairman, and you will have a demonstration of it today. Those three black machines on the table are DAT machines, and they will be used as part of the demonstration.

Senator INOUE. Mr. Ferris, before we go on with the demonstration—is that light necessary? It just shines on the back of your head, and it shines in my eyes. If it is not necessary, please turn it off.

Mr. FERRIS. The DAT looks just like every other piece of stereo high fidelity equipment. And that is a DAT tape sitting on top of it.

You will see that this is an extraordinarily good piece of equipment. It is the next generation of stereo equipment that the American consumer undoubtedly will get great enjoyment from.

And I am hopeful that this committee will not take any action that would prevent the American consumer from making their personal decision as to whether or not they wish to pay the \$1300 to have a machine of that quality.

The question raised is whether DAT recording/playback machine unique and should be treated uniquely. I do not think it should, Mr. Chairman. It is another piece of consumer electronic equipment, which can playback and record not perfect copies, as has been alluded to today, because it will not make a perfect digital copy.

As a matter of fact, the reason it will not make a perfect digital copy is in response to the recording industry that has been protesting that if the digital audio tape would do just that, it would undermine the economic viability of their industry.

The manufacturers of these machines and the recording industry sat down in Europe two years ago and worked out what they called the DAT conference. This was the hardware manufacturers worldwide and the software manufacturers, and there were 20 non-Japanese companies involved in that conference.

And they did negotiate a deal, and the deal was that the DAT, digital audio tape machines, will not make a perfect clone. To be able to record music on that machine, you have to go through an analog circuit, thus even a digital source of music, must go through the degradation that comes from an analog circuit before you can make a digital tape.

So there is a degradation. There are no perfect clones. And the reason is because the recording industry raised that same paranoia that you heard this morning, about the perfect digital audio tape copy.

And this line of argument has a sense, I am sure, Mr. Chairman and members of the committee, of *deja vu*, because it was ten years ago, the then new piece of technology that came on the scene was the VCR, the video cassette recorder. And the same efforts were made then to ban that new technology from the scene, because it was going to undermine the economic viability of the motion picture industry.

And a suit was brought to do just that, to ban the VCR. And finally The Supreme Court resolved that question of copyright law and the competing values between the consumer's desire right to

be able to watch at their convenience and the proprietary interests of those that make the motion picture were put in balance.

And the Supreme Court said, no, that taping for personal use is a fair use, it is not a violation of the copyright laws. They decided that the new VCR technology should be made available to the American consumer.

And how good and wise that decision has been for Motion Picture Industry which had valid fears them about the VCR undermining its economic viability. The VCR permitted for the first time that motion pictures would be able to be actually owned, in effect, to have one in your home for viewing at your convenience rather than have it licensed or rented for each public performance. What has happened to those claims of economic doom?

The VCR has turned out to be the best friend that the Motion Picture Industry has. The revenue stream from prerecorded video cassettes last year produced \$5 billion, \$5 billion in revenue for the motion picture industry, and well deserved.

But their anxiety and their paranoia ten years ago about this new technology that was going to destroy their economic viability was misplaced. This was a tremendous opportunity for a new revenue stream, and that \$5 billion exceeds any other revenue stream the Motion Picture Industry has. It exceeds the revenue stream of theatrical exhibition, which has gone up, incidentally, over the past ten years.

So every new technology that is developed, develops as well an anxiety in the existing technology that is threatened by it. There is going to be an undermining of the existing technology.

These machines over here, the digital audio tape recording/playback machines, like the compact disc, are going to provide the same opportunity for the recording industry to develop new revenue streams from all their existing catalogues available now, as the VCR has provided new revenue streams for the motion picture industry.

I was glad to hear that Senator Wilson characterized very candidly what this issue is. This is really a home taping issue. There is nothing unique about this. This digital audio tape machine is just the next generation of hi-fidelity stereo equipment that will be used as previous generations have been.

And the issue raised by the legislation truly is an attack upon home taping, and home taping is a legal activity. When the Sound Recording Rights Act of 1971 was passed to give for the first time a copyright in a sound recording, it was very specifically addressed as to whether home taping was legal or not.

And it was very specifically stated in the House report that home taping was not an infringement of the copyright law, and copying at home from either the radio or from your own vinyl disks was not an infringement of the copyright laws.

So home taping was recognized then as a valid and legal activity, and so well it should have been, Mr. Chairman and members of the committee, because there is a tremendous synergy between those that tape and listen to music and those that buy music.

The data in the record that have been developed over the past five years on this issue, is clear, that those that do the most home taping are those that buy the most prerecorded music.

And when I buy a piece of prerecorded music, I should be able to take that disk home, whether it is a compact disk or a vinyl disk, and be able to not only listen to it in my home, but be able to buy one of these blank tapes that Mr. Berman raised earlier this morning and be able to make a customized 90 minute tape to use on my Walkman, to be able to take selections from one album that I buy or another that I buy and make 90 minutes of my personal selections to listen to on the Walkman or to listen to in my car.

And we always have anecdotes about the kids in the dormitories or the teenagers who are swapping and selling music. If they sell it, it is a violation of the law. That is piracy, and that is subject to criminal sanctions and they should be criminally prosecuted.

But home taping is about non-commercial private use of taping equipment to make one so I can listen to that where it is most convenient to me. It is like the time-shifting in the famous Sony Beta-max case. It is place-shifting, so I can take the music that I bought and listen to it in the place where it is most convenient to me, in my car or on my Walkman.

I think that is the real issue here. I do not think this committee should ban a technology—and that is exactly what this proposal before this committee will do. If you require chips to go into this machine, these machines will not be made and distributed in this country.

And so it is a ban of this technology, because the manufacturers and distributors and the sales people know that if you impose a disabling technology legislatively on these DAT machines, these machines cannot sell. How could a salesman sell a DAT recorder if it can do less than the analog recorder?

If it cannot record. How can you sell a DAT recorder that cannot record?

So Mr. Chairman, I certainly hope that this committee will, as Senator Gore and you said, develop the facts, because I am sure the facts will shed a great deal of light on the real issues.

Thank you, Mr. Chairman.

[The statement and questions and answers follow:]

STATEMENT OF CHARLES D. FERRIS FOR THE HOME RECORDING RIGHTS COALITION*

Mr. Chairman and members of the Subcommittee, my name is Charles D. Ferris. I am an attorney in Washington, D.C. with the firm of Mintz, Levin, Cohn, Ferris,

*The Home Recording Rights Coalition includes companies that are involved in the manufacture, sale, and distribution of audio cassette recorders and audio tape, and related equipment. They include Alpine Electronics Corporation of America; Ampex Corporation; BASF Systems Corporation; Curtis Mathes; Fuji Photo Film USA, Inc.; General Electric Company; Hitachi Sales Corporation of America; International Jensen Inc.; JBL Incorporated; JVC Company of America; Kenwood Electronics; Matsushita Electric Corporation of America; Maxell Corporation of America; N.A.P. Consumer Electronics Corporation; NEC Home Electronics (U.S.A.) Inc.; Sears, Roebuck & Co.; Sanyo Manufacturing Corporation; Sony Corporation of America; Sansui Electronics Corporation; Tandy Corporation; TDK Electronics Corporation; 3-M Company; TEAC Corporation of America; Toshiba America, Inc.; Yamaha Electronics Corporation.

Membership includes many prominent trade associations and consumer groups, such as the American Council of the Blind; the Association of General Merchandising Chains; the Car Audio Specialists Association; the Consumer Recording Rights Committee; the Electronics Industries Association; the International Society of Certified Electronic Technicians; the National Association of Retail Dealers of America; the National Retail Merchants Association; the National Association of Television and Electronics Services of America; the National Electronic Sales and Services Dealers Association.

Glovsky and Popeo, P.C. On behalf of the Home Recording Rights Coalition ("HRRC") I thank you for inviting me to testify today.

The HRRC was formed in October 1981, immediately after the decision of the U.S. Court of Appeals for the Ninth Circuit in the so-called "Betamax" case. That decision, for the first time in our history, threatened to ban and withhold from the public a new consumer product on grounds that had nothing to do with public safety or welfare. Our broadly based coalition was formed to counsel against such a result. Fortunately for everyone, including the movie industry, the effort to ban the VCR failed in the Supreme Court, and efforts to ban, tax or cripple the VCR have consistently been rejected by the Congress. Today, we are here to speak up for another promising new consumer product that is also threatened with banishment.

The Home Recording Rights Coalition, since 1981, has been a broadly based group of companies, organizations, and people. Over the past five years, here are just some of the people who have testified for the Home and Audio Recording Rights Coalitions: John Roach, Chairman and President of Tandy Corp.; Jack Battaglia, General Manager, Memtek Products (makers of Memorex brand tape); Jack Wayman, Senior Vice President, Electronic Industries Assoc.; Fr. Robert McEwen, Chairman, Consumer Recording Rights Committee; Oral Miller, President, American Council of the Blind; Jim Ritchey, songwriter and musician, Greensborough, North Carolina; Scott Graves, audio retailer, Woodstock, Vermont. In opposing various measures that would have banned, taxed, or crippled new consumer recording products, these witnesses have had a common theme: consumers have, and deserve, the right to purchase new consumer home recorders and to tape at home, for personal use.

SUMMARY OF MY TESTIMONY

The essence of my testimony today is that the legislation that seeks to ban the DAT from the American market constitutes an indictment, trial and death sentence of a creative and promising product that is not yet even available to consumers. It would be fundamentally unwise for the Congress to begin mandating particular technological limitations, unrelated to safety or welfare, for new consumer products.

The last revolutionary consumer recorder, the VCR, also was subject to attempts to ban it before it could gain a foothold. Look at how strained and remote the original objections to the VCR seem now. The fact is that the new recording products become established due to of their recording capabilities, but wind up creating even greater markets for new prerecorded material.

The purported reasons for indicting the DAT, and home taping, simply don't stand up to scrutiny. Home taping itself does *not* cause the sort of sales displacement that the recording industry claims; on balance it may even be beneficial. If home taping was a cause of the recording industry's slump in the early 1980's, then what is its explanation, now, for the fact that the recording industry has never been more profitable, and that major record companies are enjoying results superior to any they have even attained, in their entire histories.

The DAT does *not* raise a single new or different home taping issue. The attack on the DAT is an attack on the right of consumers to use material which they have purchased, for private, noncommercial purposes. This attack on private consumer home taping flies in the face of survey evidence. This evidence shows:

Most tapes made by consumers are of something *other* than prerecorded music

Even where prerecorded music is involved, the major use of tape recorders is as a *playback* medium—directly contributing to record company sales and profits

When people do tape prerecorded music, more than half the time they tape something they have already bought. They keep both the original and the copy.

Every survey every done has shown that the people who do the most home taping also buy the most prerecorded music. An attack on home taping is an attack by the record industry on its own best customers.

Home taping has the documented effect of encouraging purchases of prerecorded music, either of entire albums that have only been partially taped, or of other albums by the artist or composer whose work was taped.

Considering these facts, how can home taping cost the record industry \$1.5 billion a year, as it claims? The answer is that the record industry's claim is simply false. It is built on flawed data, willful analysis, and a refusal to look at the net, overall effects of the activities in question. The falseness of these claims helps explain how it can be that the record companies are enjoying the best profits in their history while allegedly losing so much to home taping. The answer is simple. They aren't losing anything to home taping; it's the home tapers who are leading the resurgence in buying recorded music.

And quite a resurgence it is. In 1986, three record companies topped the billion dollar market in sales. In the first quarter of 1987, the CBS record division boasted the best profits ever achieved by any record company, anywhere, for any period. According to an article in the May 18, 1987 issue of *Forbes* magazine (copy attached),¹ the record business has become so profitable that companies previously offered for sale are now so valuable as to have become untouchable. Clearly, the driving forces behind this new profitability have been the prerecorded tape and, especially, the compact disc, or CD. The CD was a development of the very same hardware companies that the recording industry has pilloried for developing the DAT. Moreover, these extraordinary financial results have occurred at a time of shortage of CD stamping capacity, so many additional purchases are being delayed while the customer waits for availability on compact disc.

In light of the phenomenal profitability of the compact disc, the war against the DAT appears also to be part of an essentially commercial campaign against a new format and a new technology. This campaign appears to be based on a wish to stifle new competition from within the recording industry itself. Let us not mince words: major record companies are making so much money from selling compact discs at high margins that they fear *any* change in the marketplace that could distract the consumer and threaten their leading positions.

The May 11 issue of *Television Digest* (article attached) reported from a meeting of the International Federal of Phonogram and Videogram Producers (IFPI), the Londong-based world-wide association of record companies, that: 5 leading record companies (Berterlsman-RCA, CBS, EMI, Polygram, Warner), which account for more than 50% of the world's record production, would refuse to issue recorded DATs unless playback equipment has anticopy chip. In other words, this subcommittee is being asked to lend assistance to an old-fashioned commercial boycott apparently aimed at suppressing competition, in the form of prerecorded DAT tapes, from within the ranks of the recording industry.

We urge that the campaign against the DAT be evaluated as a particularly inappropriate revival of the war against private consumer home taping. No matter what its motives, this campaign should be rejected because the American consumer has used new technology to bring magnificent rewards to the recording industry, and if well served, can be counted on to continue doing so in the future.

The DAT has also become embroiled in debates over international trade. Such a false linkage was, appropriately, rejected by the House, and we hope the Senate will avoid raising a false trade issue, as well. For the last five years, the issue of home taping has been part of a dialogue between the American consumer and the recording industry. It has nothing to do with trade. Congress should address DAT and home taping on their own bottom, not in the context of appending a sector-specific—and, in the case of DAT, product-specific—provision to broad trade legislation. The copyright issues raised by the DAT would be no different if the first DATs were to be manufactured in Virginia or Maryland. Above all, there is absolutely no need to act precipitously now, even before the DATs are in the U.S.

We urge this subcommittee to explore and understand the poverty of the efforts that have been made to confuse private, consumer home taping with the altogether different subject of commercial piracy. We urge you to review the newspaper editorials (attached), from around the country, that have spoken out for the right of the American consumer to receive and enjoy the DAT, unencumbered by artificial technological restrictions, and the letters from smaller record companies and other organizations urging the same result. These are also attached to my statement today.

S. 506 WOULD KILL THE DAT

The DAT doesn't pollute and it doesn't explode. It is simply a better tape recorder. It uses the basic recording method of a VCR and the basic electronics of a compact disc ("CD") player to record digital tapes that are the sonic equal of CDs. If you decide thumbs up, these recorders and tapes will be available to the public. Thumbs down, they probably won't be.

The American consumer has supported both the hardware manufacturers and the recording industry magnificently. In return, consumers have received, for their private, noncommercial use, the benefits of continued advances in technology. There is no reason to stop, limit, or define technology at the door of the DAT. S. 506 is extraordinarily dangerous, both for its own effects and as precedent. It raises some fundamental concerns as to whether Congress, without truly compelling public reasons, should legislatively define, regulate, and limit new technology.

¹ The attachments referred to throughout this statement were not reproducible.

WHY RECORDERS MUST RECORD

Fish gotta' swim, birds gotta' fly, and recorders gotta' record. The anti-taping chip required by S. 506 would effectively kill the DAT as a new format. Take the case of the only other new product to go on trial for its life, the VCR. When the VCR was first offered, at prices exceeding \$1,000 (the same range in which DATs reportedly would be first offered), would anyone have bought it if it lacked the ability to record? Indeed, take the standard analog cassette, which is now the recording industry's major prerecorded product. Would anyone have bought home tape decks if they lacked the ability to record?

Common sense, and consumer surveys, teach us that consumers *buy* new tapes of recorders to have the freedom and flexibility to make their own tapes, but they *use* them primarily to *play* prerecorded tapes. The reason is that movie studios and recording companies are much more efficient in packaging and distributing movies and music than consumers, themselves, will ever be. Of course people make a great number of recordings at home, too. With VCRs, they are primarily for "time shifting" of broadcasts. With audio recorders, recordings are primarily to edit, preserve, and make portable the music the home taper has already bought.

THE CHARGES AGAINST THE DAT, AND HOME TAPING, DO NOT WITHSTAND SCRUTINY

In light of the favorable experience with phonographs, radio, television, the VCR and other new consumer recording products, why is the DAT in the dock today? It faces three charges, none of which stands up to scrutiny. Charge (1) is that, when it comes to consumer home taping practices, the DAT is somehow different from other recorders. Charge (2) is that consumer home taping itself should be limited, because it allegedly costs the recording industry \$1.5 billion per year in displaced sales. Charge (3) is that home taping has caused the recording industry's new releases to decline 43% since the peak year of 1978.

The DAT will not be used differently from existing recorders

DAT recorders will not be used differently from other recorders; they will principally be used for playback and for some home taping. As my learned friend Len Feldman will explain, the DAT, like other recorders, cannot make "master quality" recordings of prerecorded music. All it can do is record such music through its analog input, to make a very good recording, but a recording that is nothing like a "digital clone."

There is no reason whatsoever to assume that DAT recorders are somehow illegitimate. Under both the 1971 legislative history accompanying the Sound Recording Act and case law, private, consumer home taping is legal. No lawsuit has ever been brought claiming that audio home taping, by consumers, is illegal. The gist of my presentation today, and that of Mr. Feldman, is that there is no reason at all to treat the DAT any differently from other home taping devices.

Home taping does not have the sales displacement effects claimed by the RIAA

Most home taping of prerecorded music—whether it involves a boom-box, a Nakamichi tape deck, or a DAT—is of selections from albums that the taper already owns. From this fundamental truth, it should be obvious that the RIAA's analyses, which are used to show that home taping causes a net displacement of sales of prerecorded music, must be suspect.

Contrary to what the recording industry would have Congress believe, home taping is, by and large, independent of sales of prerecorded music, or actually stimulates such sales. A full-scale survey of home audio taping in the United States was conducted in July 1982 by Yankelovich, Skelly and White, Inc. ("Yankelovich Survey") for the Audio Recording Rights Coalition. The study was reported as "Why Americans Tape": A Survey of Home Audio Taping in the United States.² The Yankelovich Survey findings are, moreover, confirmed by data from the recording industry's own earlier surveys of audio taping.³ Some of these findings are:

² The full published report of the Yankelovich Survey, including the survey questionnaire and methodology, is being submitted along with this statement. Additional copies are available from the ARRC: 2001 Eye Street, N.W., Washington, D.C. 20006. The ARRC is an adjunct to the HRRC.

³ The recording industry surveys include: Audits & Surveys, "Home Taping in America: 1983, Extent and Impact" (Oct. 1983) ("Audits & Surveys") (prepared for the Recording Industry Association of America, Inc.); Warner Communications, Inc., "A Consumer Survey: Home Taping" (Mar. 1982) ("Warner Survey"); CBS Records Market Research, "Blank Tape Buyers: Their Attitudes" ("CBS Survey"); and Roper Organization, Inc., "A Study on Tape Recording Practices Among the General Public" (June 1979) (conducted for National Music Publishers Association and Recording Industry Association of America) ("Roper Survey").

The majority of material that consumers tape is not copyrighted music. When people do tape prerecorded music, they do so to get customized selection tapes or features, such as portability, quality, and convenience.

People tape primarily from albums they themselves have bought. They keep the original and the copy.

Tapers do not make recordings primarily to avoid purchasing records and prerecorded tapes.

Active home music tapers are, by far, the most avid fans and heaviest buyers of prerecorded music.

MOST HOME TAPING DOES NOT INVOLVE PRERECORDED MUSIC

More than half of all home audio taping is done for some purpose other than taping prerecorded music.⁴ In fact, a quarter of all home tapers never even tape prerecorded music.⁵

Tapers use audio recorders for a myriad of reasons, including family, educational,⁶ and business purposes. For example, almost half of all home tapers surveyed record music performed by themselves or their family or friends, such as a child's musical recital or an amateur rock band.⁷ Tapes are a common element of both traditional festivities, such as weddings and birthday parties, and are used in new technologies, from telephone answering machines to home computers.⁸

Over a half-million dictation machines are sold annually in the United States.⁹ Private and governmental reporting services account for enormous numbers of recorders used in courtrooms, at depositions, and at congressional hearings.¹⁰ Educational institutions use thousands of tape recorders—in language labs or to tape music rehearsals. Non-profit institutions use recorders to bring literature, current events, and educational materials to the visually impaired, home-bound, or senior citizen communities.

Home taping does not compete with prerecorded music

When home tapers do record prerecorded music, the tapes they make are a very different product from the records and prerecorded tapes that are available in the market. For the great majority of tapers, home taping is largely a means of enjoying and organizing their music collections, not an alternative to or substitute for buying prerecorded music.

Home tapers tape primarily to put together their own program of selections

Tapers' primary reason for taping prerecorded music is to create their own programs of musical selections. More than seven out of ten home tapers rated "the ability to put together their own programs of selections" as a "very important" advantage to home-recorded tapes as compared to both records and prerecorded tapes.¹¹ Tapers' actions confirmed their words: two-thirds (65%) of the average home tapers' collection of home-recorded tapes contained only musical selections, rather than complete albums.¹²

⁴ Specifically, "home tapers" (persons who made a home audio recording of any kind in the last two years) recorded something other than prerecorded music on 52% of the tapes they made in the three months preceding the Yankelovich Survey. Yankelovich Survey at 14, 36. In other words, fewer than half of the total tapes recorded at home contain prerecorded music.

⁵ Yankelovich Survey at 15, 29. 44% of tapers age 50 and over have *never* taped any prerecorded music. Yankelovich Survey at 15, 42-43. A study commissioned by the Copyright Royalty Tribunal confirmed that over half of home tapers (57%) do not tape music at all. See Wm. R. Hamilton, "A Survey Of Households With Tape Playback Equipment," at 5 (Sept. 1979) ("Hamilton Survey").

⁶ Forty-five percent (45%) of home tapers tape for educational purposes, such as lectures. Yankelovich Survey at 14, 37-38.

⁷ *Id.*

⁸ *Id.* More than eight out of ten home tapers (82%) have recorded something other than prerecorded music. Yankelovich Survey at 37.

⁹ See Computer and Business Equipment Software and Telecommunications Industry 1960-1995, Industry Characteristics Report (1986).

¹⁰ Assuming that each of the 18,000 members of the National Shorthand Reporter Association transcribed forty hours a week, they would, alone, account for thirty-six million hours of taping of non-copyrighted material on an annual basis.

¹¹ This was, by far, the reason most often cited for preferring home-recorded tapes to prerecorded tapes. Yankelovich Survey at 17, 63-68. The CBS Survey confirmed that 75% of blank tape buyers use recording equipment to make "custom" tapes. CBS Survey at 11.

¹² Yankelovich Survey at 17. According to the Warner Survey, respondents spent over half (56%) of their time taping making records of selections. Warner Survey at 15.

Simply stated, the great majority of home-made tapes do not displace sales of prerecorded music because they are not mere duplicates of or substitutes for any pre-existing records or tapes. They are unique creations assembled by the taper, frequently from the tapers' own collection of records and prerecorded tapes.

Indeed, the fact that home taping does not compete with sales of prerecorded albums was recently highlighted in news stories about a new system in which some record companies would make a limited menu of individual performance available for taping, in record stores. The *Wall Street Journal* (May 5, 1987) quoted an official or Warner Special Products as saying, "We don't see [this service] as a replacement for merchandise in the store, but as a replacement for home taping."

In other words, the promoters of this system recognize that home taping is not a commercial threat to album sales. As one of the system's creators was quoted in *Billboard* (May 9, 1987), "Instead of looking at home taping as something to be outlawed, look at it as a service to be provided."

Tapers also seek portability, convenience, quality, and availability through home taping

Portability is another major reason for home audio taping. Tapers want music they can take where records will not go. Fully 75% of tapers cite portability, and 57% cite convenience, as "very important" reasons for sometimes using home-recorded tapes instead of records.¹³ 80% of all home tapers own one or more portable tape players, such as car stereo system or Walkman-type players.

Even when the demand for portability is met by prerecorded tapes, however, the tapes on the market have not satisfied the needs of home tapers. Over half (51%) of home tapers consider the longer playing time of home-recorded tapes a very important reason for preferring them to prerecorded tapes.¹⁴ The better quality and greater durability of home-recorded tapes are also important to home tapers.¹⁵ One would think that the recording industry would be quick to embrace the DAT format, which promises to make its prerecorded cassette releases the best quality achievable, than the worst.

People do not tape just to save money

Saving money is not the principal motivation for home taping—notwithstanding the bald claims of the recording industry. Home tapers record primarily to obtain products or characteristics not otherwise available: tapes of customized selections, portability, and better quality.

Even when comparing home-recorded to prerecorded tapes, tapers do not list cost as the primary reason for making their own tapes. That is, virtually all tapers (99%) who mentioned cost also listed other reasons for preferring home-recorded tapes to records or prerecorded tapes.¹⁶ The idea that the DAT must be kept off the market on an emergency basis, to avoid a flood of home taping, is especially at odds with experience. Is anyone going to spend \$1,500 for a first-generation DAT just to save a few bucks on albums?

Half of all home tapers of prerecorded music are made from the taper's own records or tapes

Just over half (51%) of all music tapes made at home were made from the taper's own collection of records and prerecorded tapes. In each of these cases, the taper kept both the original and the copy.¹⁷ Two out of three (66%) home music tapers had made home-recorded tapes from their own collection in the six months prior to being surveyed.¹⁸ The Warner Survey found that a similar share—45%—of home music tapes are made from records and tapes in the taper's own collection.¹⁹

Home audio taping stimulates purchases of prerecorded music

One of the most interesting facets of home taping is that it often stimulates new purchases of prerecorded music. The survey data dramatize this finding. The majority of home tapers (55%) often or sometimes buy a record after they have made a

¹³ Yankelovich Survey at 18, 69-76. Over a quarter of those who tape albums most often do so to make copies of records for listening in their cars or offices.

¹⁴ Yankelovich Survey at 19, 87-95.

¹⁵ *Id.*

¹⁶ Yankelovich Survey at 21, 91-93.

¹⁷ Yankelovich Survey at 22, 54.

¹⁸ *Id.* at 22, 52.

¹⁹ Warner Survey at 22.

home tape of the whole record or selected songs or portions of it.²⁰ That taping and purchasing are symbiotic activities is confirmed by the fact that over half of all home music tapes are made from a taper's own collection.

Many people buy records and compact discs just so they can tape them for their cars, their personal stereo, or their office.²¹ For the home taper, a key component of the value the purchase price is that the prerecorded music can be taped; by taping, the consumer can both preserve the music purchased, prolong the period during which the music can be enjoyed, and expand the area in which it can be played. The Warner Survey concludes that, buying and taping both reflect a more general commitment to music. That is, the more one sees music as important, the more likely one is to engage in both buying and taping.²²

Home audio tapers who buy prerecorded music are much more likely than persons who buy but do not tape music to rate music as a "very important" element in their lives.²³ Interest in buying music, records, and prerecorded tapes, and home taping reinforce each other, with each behavior building on and gaining momentum from the others.²⁴ Home taping and buying prerecorded music apparently go hand-in-hand.

The heaviest home music tapers illustrate this point most dramatically. Those who tape the most prerecorded music, on average, are also the largest purchasers of prerecorded music. According to the Roper Survey, based on reports from all adults, those who record music on tape are much heavier buyers for their own use of records, pre-recorded tapes and blank tapes than are non-recorders. . . . Roughly twice as many adult tape recorders as non-recorders buy LP records, singles and pre-recorded 8-track tapes. Four times as many recorders as non-recorders buy prerecorded cassettes. . . .²⁵

Moreover, tapers spend much more money than non-tapers on prerecorded music.²⁶ As Arthur H. White, Vice President of Yankelovich, Skelly and White, put it in his testimony before the Subcommittee on Courts, Civil Liberties, and the Administration of Justice of the House Judiciary Committee, "In short, those who tape also buy, and the more they tape, the more they buy."²⁷ This was put even more succinctly in an article in *Rolling Stone* magazine:

Home tapers aren't a bunch of freeloaders, they're the very people the record industry depends on to turn a release platinum In essence, the record industry is saying that its best customers are its worst enemies.²⁸

²⁰ Yankelovich Survey at 16, 45-48. Home taping of borrowed records has introduced two out of three tapers (64%) to musical artists or composers whom they discover that they like, and well over half (57%) have been prompted to buy records or prerecorded tapes after taping an artist's work. *Id.*

²¹ Yankelovich Survey at 22, 49, 58. The recording industry's surveys confirm that home tapers "tape primarily from their own collections." Roper Survey at 3 (tapers' own record and tape collections are "the largest single source" of home recordings); CBS Survey at 12 (40% from own collection).

²² Warner Survey at 36.

²³ Warner Survey at 33, 35. Those who both tape and buy prerecorded music are more likely than others to rate themselves as knowledgeable sources of information about prerecorded music (38% affirmative for taper-buyers compared to 20% for tapes-only/18% for buyers-only), are more likely to "consider themselves collectors" (51% for tapers versus 17% for non-tapers), and to discuss prerecorded music with others (38% versus 6% of non-tapers/non-buyers). Warner Survey at 36-39. Tapers are also substantially more likely than non-tapers to go to love concerts (55% compared to 30%), to read about music (62% versus 36%), and to prefer receiving records and tapes to other items as gifts (74% versus 40%). Warner Survey at 39.

²⁴ Interestingly, heavy radio listeners, who might be expected to tape music from the radio instead of buying prerecorded music, are in fact more likely than lighter radio listeners to buy prerecorded music cassettes, by margins of 8%-49% above the average, depending on age. McGavran-Guild Research, "Cassette Tapes, Radio and You" (1982). Once again, music listening and buying appear to be additive rather than substitute behaviors.

²⁵ Roper Survey at 6-7. Indeed, eight out of ten (82%) of the tapers surveyed were current buyers of records and prerecorded tapes, while only 44% of non-tapers reported purchasing prerecorded music. Warner Survey at 32. According to the CBS Survey, 80% of blank tape buyers also purchase prerecorded music. CBS Survey at 6.

²⁶ Although only 31% of record and prerecorded tape buyers are tapers, in dollar terms they account for almost half (48%) of the total amount spent on prerecorded music. Warner Survey at 32. Heavy tapers own approximately three times as many record albums and prerecorded tapes as light tapers. Yankelovich Survey at 16, 61-62.

²⁷ *Home Recording of Copyrighted Works: Hearings on H.R. 4783, H.R. 4794, H.R. 4808, H.R. 5250, H.R. 5488, and H.R. 5705 Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judiciary, 97th Cong., 2d Sess. 1040 (1982) (statement of Arthur H. White).*

²⁸ "The War Against Home Taping," *Rolling Stone*, Sept. 16, 1982, at 59, 64.

Recording technology contributes significantly to the recording industry

The campaign to depict technology as the enemy of the creative community—a characterization brought to its final extreme in the all-out attack on DAT—defies economic reality. The facts show that home taping technology has created a billion dollar annual prerecorded tape market for the industry. Many key retailer and record company executives do recognize the valuable contribution that home recording technology has made to their industry. As Russ Solomon, President of Tower Records, said in an interview:

[I]f you didn't have the home-recording business, you wouldn't have Walkman machines. In other words, the tape technology that came out of the recording machine resulted in the portable playback machine and the automobile machine, which created an enormous market for us.²⁹

THE RECORDING INDUSTRY SURVEYS FAIL TO PROVE THAT HOME TAPING HAS AN ADVERSE IMPACT ON COPYRIGHT OWNERS

To support its claim that sales are displaced by home taping and that the impact of such behavior on the industry is negative, the recording industry has rested on two studies—the Warner Survey of 1982 and that undertaken by Audits & Surveys in 1983—and two analyses by Dr. Alan Greenspan based on the data from those surveys.³⁰ The studies and analysis, however, (1) ignore entirely the stimulative impact of home taping behavior on the purchasing of prerecorded music; (2) disregard the benefits to copyright owners and the entire creative community from recording technology; (3) assume that taping is a substitute for the purchase of prerecorded music when the data demonstrate that it is not; and (4) are so riddled by methodological and analytic errors as to be completely unreliable as a basis upon Congress can or should determine to burden home tapers.

The net effect of home taping on the recording industry is beneficial, not harmful

With its tunnel vision on the purported evils of home taping, the industry never looks at the whole home taping picture—made up of allegedly displaced sales and the substantial sales that are stimulated by the availability of home taping. Thus, neither the industry nor Dr. Greenspan has ever tried to measure the net impact of home taping.³¹

Dr. Greenspan has flatly asserted that "home taping should be viewed as an alternate means of acquiring recorded music."³² With this bias, he then estimated that more than two-fifths of home taping was in lieu of the purchase of prerecorded music in 1982.³³ This estimate is credible only if records and prerecorded tapes are, in fact, close substitutes for tapes recorded at home. But clearly they are not.³⁴

²⁹ M. Goldberg, "The Wisdom of Solomon," *Rolling Stone*, Nov. 22, 1984, at 39.

Russ Solomon's words echo those of Jan Timmer, now president of Polygram International, who commented on home taping technology at the International Music Industry Conference in 1982.

[Y]ou can't have the blessings of technology without trying to cope also with the unpleasant aspects. I would, however, suggest that the influence of technology has been positive and stimulating and the negative aspects, which we all recognize, are not of greater importance than the beneficial elements.

"IMIC '82: The Challenge of Change: Timmer Keys on New Technology" *Billboard*, June 5, 1982, at 53.

³⁰ See *Hearings on S. 1758 Before the Senate Comm. on The Judiciary*, 97th Cong., 1st & 2nd Sess. at 920 (statement of Dr. Alan Greenspan); *Video and Audio Home Taping: Hearings on S. 31 and S. 175 Before the Subcomm. on Patents, Copyrights and Trademarks of the Senate Comm. on The Judiciary*, 98th Cong., 1st Sess. 229 (1983) (statement of Dr. Alan Greenspan) [hereinafter "Video and Audio Home Taping"].

³¹ In neither his April 1982 nor his October 1983 testimony, does Dr. Greenspan integrate the stimulative effect of the ability to tape prerecorded music into his analysis. Although Audits & Surveys did attempt to ascertain whether home taping stimulates record purchases, it asked the wrong questions: asking why people bought a record does not adequately probe the symbiotic behavior of purchasing and taping prerecorded music.

³² *Video and Audio Home Taping*, at 226.

³³ *Id.* at 86, 229.

³⁴ In seeking a preliminary injunction against a proposed joint venture involving Warner Communications, Inc. and Polygram Records, Inc., the Federal Trade Commission argued that the recording industry exaggerates the amount of home taping and that consumers do not view home taping as a substitute for prerecorded music. See "Merger of Warner Unit, Polygram Angers Troubled Record Industry," *Wall Street Journal*, Apr. 12, 1984, at 33. The Ninth Circuit Court of Appeals, in issuing the injunction, noted the distant characteristics of prerecorded music and held that "prerecorded music and home tapes are not interchangeable." *F.T.C. v. Warner Communications, Inc.*, 742 F. 2d 1156, 1163 (9th Cir. 1984).

So first, the record industry's studies should, but do not, exclude sales that cannot be a substitute for prerecorded music. Further, the industry surveys and Dr. Greenspan's analysis do not appropriately discount all taping done from one's own collection of records and prerecorded tapes: this music has already be bought and paid for.

The industry surveys do not even address the various uses to which tape recorders are put by businesses or educational institutions.³⁵ Thus, the surveys consistently misstate the impact of home music taping by greatly exaggerating both the actual amount and its proportion to overall audio taping.

Moreover, the estimates of home audio taping are based on data that are grossly defective. First, the industry's own estimates of sales lost due to home taping have fluctuated dramatically over the years and are, at best, woefully uncertain.³⁶ Moreover, the industry is asking decisionmakers to believe the incredible—that the number of albums of music taped in a survey year is substantially in excess of the known amount of tape sold in that year. The Audits & Surveys estimates of home music taping is *two to three* times larger than the amount of tape sold.³⁷

Furthermore, the industry calculations never even take into account the substantial quantity of cassettes sold to businesses for taping other than copyrighted music. If the recording industry surveys had taken this number into account, there would be an ever more striking disparity between the tapes actually sold and the amount of music that the industry claims is taped at home.³⁸

In addition to being grossly exaggerated by overestimates of home taping, the estimates of displaced sales, (based on the Audits & Surveys data) are also inflated by serious methodological flaws in survey procedure. First, the methodology violated a basic principle of market research: it asked people to make hypothetical buying decisions by asking whether they would have bought a record or prerecorded tape had they not been able to make a tape and, if so, how many they would have bought had they not been able to tape. It is impossible to obtain reliable data from questions that call for entirely speculative responses. People are always more willing to say they will spend money than they are actually to spend it.³⁹

A second problem with the Audits & Surveys approach to estimating lost sales is that it invited respondents to say that they would have purchased an album of a tape for which no album either was available or could, in fact, have been purchased.⁴⁰

Third, Audits & Surveys also asked people how many records or prerecorded tapes they would have purchased had they been unable to tape. It is incredible that people would have bought multiple copies of the same recording if they could not have made their own tape. To count each of these multiple copies as a displaced sale

³⁵ A very substantial percentage of the audio recorders sold in the U.S. is consumed by businesses. Many businesses, particularly small-scale businesses, purchase recording equipment from ordinary retail stores. Consequently, hardware destined for business use cannot be distinguished from that destined for home use.

³⁶ In 1982, Dr. Greenspan estimated that lost record sales in 1981 were approximately \$900 million. *Hearings on S. 1758*, at 920. Based on the Audits & Surveys data, he opined only a year later that losses had risen by over \$550 million, to over \$1.4 billion. See *Video and Audio Home Taping*, at 229. The Warner Survey, using 1980 data, estimated lost sales at between \$608 million and \$2.85 billion annually. Warner Survey at 46. Moreover, ever since 1982, the recording industry's coalition has cited the work of Dr. Greenspan and others to prove that home recording pushes the price of prerecorded records and tapes up. On the very same occasions, Dr. Greenspan himself has testified that home recording pushes the price of prerecorded records and tapes down.

³⁷ See *Video and Home Taping*, at 419, 420-21 (statement of Nina W. Cornell, President, Cornell, Pelcovits & Brenner).

³⁸ It is, of course, possible to re-record on audio tape. Nevertheless, this practice means that many tapes are kept for only a short time. Buried in a footnote in Dr. Greenspan's analysis is the notation that his estimates of displacement are based on a single use of a blank tape purchased in 1982. *Video and Audio Home Taping*, at 90 (Table 5, note 1). Of course, if tapes are erased and used more than once, as seems likely, Dr. Greenspan's consistent assumption that home taping displaces sales is clearly false.

³⁹ Asking a respondent who tapes a record that he or she already owns how many copies would have been purchased had taping not been possible, invites respondents to say that they would have bought one or two more *additional* copies of a record already in their collections. Such questions—and responses—defy common sense.

⁴⁰ Thus, Audits & Surveys invited unreliable responses. According to its report, 40 percent of all music tapes are made from radio, concerts, and from home-recorded tapes. Audits & Surveys at 9. As many of such tapes are not available, or have some special value to the tapper, 40 percent of the decisions respondents were invited to make were purely speculative, with no grounding in commercial reality.

is to demonstrate further the exaggeration of the estimate of lost revenues from home taping.

A fourth problem with the methodology was that it presupposed that individuals would buy an entire album even though they only taped a selection from that album. Audits & Surveys counted each "selection" taped as a lost album sale.⁴¹ And, from the information available, it appears that one third of the total estimate of displacement is from such responses.

Fifth, the survey report of the RIAA releases no data on how many tapes were made from a respondent's own collection. Dr. Greenspan nevertheless estimates that 42 percent of taping from records already owned by a taper would have resulted in purchases of additional copies.⁴² From this, and other data, he derives his over-estimates of sales displaced by home taping behavior.

Aside from the statistical flaws with respect to both the amount of home taping and estimates of displacement based thereon, a major underlying methodological difficulty with the Audits & Surveys approach is the novel manner in which the data were collected, through in-home visits. The validity of the data gathered with respect to home taping depends entirely on whether the interviewer asked for—and was shown—home recorded tapes containing other than prerecorded music. There is no indication that each and every type of home recorded tape was produced, wherever located in the home. The interviewer asked only about "home recorded tapes," not reminding the respondents of the wide range of possible uses in addition to taping music; nor is there any suggestion that the interviewer asked about locations where non-music tapes might be found.

Moreover, the weekly telephone surveys used by Audits & Surveys also were designed to produce results that overstated the amount of home music taping. The questions focused on the taping of music; it is quite possible, therefore, that subsequent interviews with telephone respondents were with individuals who recorded music.

Similarly, it is not surprising that Audits & Surveys did not obtain accurate information with respect to the stimulative effect of home taping on record purchases. Respondents were not asked whether they bought records to make them portable, to preserve them, or to make selection tapes. Thus, the estimate of displacement overstates the impact of taping on the purchases of prerecorded music.

That the Audits & Surveys statistics are imprecise was acknowledged openly by the report, which conceded that the data collected could be interpreted to arrive at an entirely different breakdown between copyrighted and non-copyrighted material—64% to 35%, when measured by the total amount of taping, in contrast to 84% to 16%, as derived by the audit approach.⁴³ Although the report speculated as to the differences between these two breakdowns, there is no reason to do so. The data were collected—the record industry still refuses to release them.⁴⁴

At bottom, Greenspan's analysis is so far off base that the \$1.5 billion figure, promoted by the recording industry for several years now, might as well have been pulled out of air. When one adds the greatest omission—the failure to account for the benefits of the recording technologies—the 1.5 billion dollars could just as easily reflect dollar gains—not losses—from home taping. As Tom G. Palmer observed in the March 24, 1987 Wall Street Journal, magnetic tape has become part of a system of portable and automotive players, centered around the home tape recorder. This system exists only because home recorders exist. It is virtually undeniable that the Walkman, the car stereo, and the home tape deck itself have combined to greatly enhance the demand for prerecorded music. If all of these tape recorders, and the tape players they have spawned, could be collected from consumers and dropped in the Pacific Ocean, would the recording industry really be better off?

THE ANTI-CHIP IN NO WAY CURES THE OVER-BREADTH OF ATTACKING ALL HOME TAPING

One supposed justification for putting anti-taping chips in recorders in general (as the recording industry openly acknowledges is its goal), and in DATs in particular,

⁴¹ Audits & Surveys at 29.

⁴² Video and Audio Home Taping, at 228-29 (statement of Dr. Alan Greenspan).

⁴³ Audits & Surveys at 10.

⁴⁴ The failure to release certain critical information makes the Audits & Surveys report entirely inadequate as a basis for important public policy determinations. For example, even though the survey inquired as to the ownership of records that were recorded by home tapers—whether owned by the taping household or by someone outside that household—the results have never been released. Nevertheless, answers to that question are crucial, both for determining whether people would have bought a record had they not been able to tape it and as to the equity of any proposal to penalize each of the various home taping practices.

is that this would avoid the immense unfairness of attacking all home taping, because about half of all home taping is of something *other* than prerecorded music. This unfairness is avoided, the industry claims, by implanting a "smart" chip that attacks prerecorded music only.

The rationale for a "smart" anti-taping chip works only in theory, not in practice. It ignores the fact that people simply won't buy new, and initially expensive, tape recorders if they are less capable than those already on the market, and particularly if they can't be used to tape records they have bought themselves. Therefore, the reality of the anti-taping chip is that it is a ball-and-chain that simply sinks the DAT. And if the DAT sinks, all of its potential personal uses, that have nothing to do with prerecorded music, go down with it.

Thus, the anti-taping chip proposal, particularly as applied to DATS, might be the *most* overbroad anti-home taping proposal yet. Here are just some of the potentially exciting uses, that have nothing to do with prerecorded music, that would go down with the DAT:

Demonstration tapes by bands that can't afford professional studios.

Home music practice.

Composition and performance, electronically or otherwise, involving over-dubbing.

Use with personal computers and for other data storage—a 120 minute DAT tape holds almost 1 gigabyte of information.

Recording *video* information—already, a prototype video camcorder has been shown, using DAT tape cassettes.

In short, the DAT's greater capabilities mean that it would be used for *more* activities that don't involve prerecorded music, not fewer. This anti-taping chip, by killing the DATA as a viable consumer product, would keep DATs out of the hands of the people who want to put them to such uses—or, at the very least, would make DATs much, much more expensive, because they never would become mass market items. Therefore, the anti-taping chip requirement would be as much, and possibly more, of an overbroad tax, on the populace at large, as other proposals that would tax or curtail home taping.

HOME TAPING HAS NOT CAUSED THE DECLINE IN NEW RELEASES

The third charge against the DAT is that home taping, by supposedly displacing record sales, has caused industry new releases to decline 43% since the peak year of 1978. But in its trade press, the industry has acknowledged, time and again, the real reasons new releases are down: in 1978 the industry was flamboyant, short-sighted, and totally unprepared for the down cycle that (like many other industries) it experienced from 1980 through 1982.

The recording industry is enjoying new efficiency and record profitability

One finds a guide to the true state of the recording industry in the (attached) articles from the industry trade press. On a single page in the March 28, 1987 issue of *Billboard*, one headline says, "House Subcommittee OKs DAT Copy-Code Provisions;" another headline says: "Polygram's Acts Bring in Banner Year; Global Profits Soar to \$120 Million in '86." The article says 1986 was "the best-ever 12-month period in the company's history," and that Polygram has joined WEA and CBS in having annual grosses over \$1 billion and profits over \$100 million. It then quotes London-based Polygram senior executive vice president Leonard Fine as to why this company is so profitable:

Ever since the days of our discussions with WEA [a merger blocked by U.S. antitrust authorities], we've been going through a major restructuring process. . . . We've lowered our break-evens and substantially reduced our whole infrastructure cost.

We're leaner, better-staffed, and better-managed. All our operations in 27 countries have been trimmed down to size so as to work more effectively. . . .

Mr. Fine said that 1986 results are "a sustainable profit; it's not just a flash in the pan."

I have also attached to my statement articles detailing the extraordinary results that have been achieved by the CBS and WCI (Warner) record groups in 1986 and the first quarter of 1987. The *Billboard* articles refer to the 1986 CBS results as "the highest revenues and income [ever] generated by a record company," and to CBS' first quarter of 1987 as its most profitable in history. They say that Warner's three domestic labels "set a new collective sales record."

And I have appended an article from the May 18, 1987 issue of *Forbes*, which refers to record companies as "gold mines."

In citing these results, we are by no means implying that record companies are too rich to be allowed to petition the Congress. What we are suggesting is that the very factors cited by the recording industry as indicating *problems* due to home taping reflect, in reality, efficiencies that have carried the major labels to *new levels of profitability*.

It is also entirely appropriate to consider the present levels of return from the marketplaces, whenever the subject is the adequacy of copyright protection. The constitutional purpose of copyright is to encourage creativity, rather than to guarantee any particular rate of return. The spectacular financial results being enjoyed by the recording industry indicate that present incentives are more than adequate to encourage new investment in prerecorded music.

When record companies first came forward, in late 1981, pleading for a royalty tax on blank tape and recorders, they were by no means reluctant to discuss their financial results, because they attributed their problems, then, to home taping. Now that record companies are booming, shouldn't the suppliers of the new hardware that their customers have used to give them such record profits get a little credit, rather than more abuse?

New release are constrained by the shortage of CD stamping capacity

In addition to the record industry's new self-discipline, the other major factor affecting new releases has been the shortage of compact disc stamping capacity. Ever since the CD format was introduced by the same companies that manufacture tape recorders, the recording industry has consistently underestimated the demand for it. New stamping plants, most of them built by hardware manufacturers rather than record companies, have been unable to catch up with demand.

Accordingly, recording industry executives have used the available capacity to issue major releases, rather than using the same, limited capacity to issue a greater number of more minor releases. Indeed, smaller labels and marginal artists have been squeezed out by the recording industry's shortage of stamping capacity—for each mega-hit stamped on CD, there could have been dozens of CD releases by lesser known artists, had the capacity been available. In other words, the recording industry's decline in new releases since the peak in 1978 is much more a matter of *supply* considerations than of *demand*.

THE FACTS ABOUT A PRERECORDED TAPE BOYCOTT, DUAL INVENTORIES, AND COMMERCIAL PIRACY SHOULD BE FULLY DEVELOPED

Several things about the anti-DAT legislation should draw careful attention from a skeptical Congress. Why are major record labels apparently boycotting the prerecorded DAT format? Is their true intention to kill the format for competitive, commercial reasons? Can and will record companies keep their promises to issue a separate inventory of unencoded, copiable recordings? Would the DAT lead to increases in commercial piracy, as the recording industry claims?

The apparent boycott of prerecorded DAT releases

I am sure you will agree that the Congress of the United States should not be a vehicle for helping major record labels avoid competition from smaller labels. In a sense, avoiding such competition is what this legislation is principally about.

It is ironic indeed that we're beginning to hear objections to the DAT on the (incorrect) basis that insufficient provision has been made for production of prerecorded DAT cassettes. This is the old story of shooting your parents and applying for relief as an orphan. *It has been executive of some of the major record companies who have said they would never license their titles for release as prerecorded DAT tapes.*

One such executive, in a public speech referred to fears that the industry "wall" in this respect might be breached, and admonished another major company for signing a distribution agreement (not including DAT) with a smaller company that had announced it intended to issue albums in the DAT format. Attached to my statement today are reports from the trade press suggesting that such a boycott is under way, indeed, with the assistance of at least one major retailing chain.

Most recently, the May 11 issue of *Television Digest* reported from a meeting of the International Federation of Phonogram and Videogram Producers (IFPI), the London-based world-wide association of record companies, that five record companies, which control more than half the world's production, would engage in such a boycott.

Such a naked, world-wide commercial boycott says much about recording industry motivation and tactics with respect to DAT. It means that these companies simply have asked the Congress to provide a facilitating device for a conspiracy to protect major labels from competition from smaller labels.

Prerecorded software duplication is readily available

In addition to its apparent insincerity, the charge that prerecorded software duplication facilities will not be available is simply wrong. Attached to my statement is a photograph and specification sheet of equipment that is already available for real-time duplication of prerecorded cassettes. This commercial unit, developed by Sony, uses the "master and slave" technique that, until recently, was the *only* method for manufacturing prerecorded video cassettes. A "master" player is hooked up to a number of "slave" recorders, so as to produce several tapes simultaneously.

An even more exciting prospect is the commercial "contact printer," expected to be available in about 1 year (the time necessary for enough DATs to be sold to create a large demand for prerecorded software), which will produce prerecorded DAT tapes through the physical contact (rather than electronic recording) process now used to make many prerecorded video tapes. This machine will operate at about 150 times the "real time" speed, so as to make possible the manufacture of prerecorded tapes at extremely low cost—lower than the present cost of manufacturing compact discs, and perhaps below the cost of manufacturing existing analog prerecorded cassettes.

Indeed, the prospect of a reasonably priced prerecorded DAT market clearly appears to be a significant factor in driving major record companies to boycott DAT software—at least while margins on CDs remain so high.⁴⁵ Should the Congress play a role in holding off price relief to consumers, through competition, by suppressing a product that hardware producers, and independent software producers, are fully prepared to make available?

Are record companies sincere about offering encoded and unencoded inventories? Will encoded discs be so labeled?

The recording industry has suggested, but not promised, that record labels might issue a separate inventory of unencoded recordings, at a higher price, to give people the "privilege" of taping their own records. When this idea was first publicly explained to leading record retailers, in the speech to which I have just alluded, many of them reacted with shock and horror. (Articles quoting their reactions are attached to this statement.) A separate inventory of every record, tape, disc, and prerecorded DAT tape appears unsustainable—there might be two versions of each Bruce Springsteen album, but only at the expense of carrying *any* version of a more minor artist's release. In my judgment, record retailers simply do not believe that the industry will issue dual inventories of more than a few releases, and I think they are correct. Moreover, given the criticism, that is now emerging of the effects of the CBS encoding, is it even clear that the industry will label or reveal which albums it has encoded?

Piracy is simply irrelevant to DAT

One other notion floated by the recording industry is that the DAT somehow will make commercial piracy more of a problem than it is today, and that the CBS chip somehow would curtail piracy. This is implausible on its face. Piracy is the unauthorized copying of works and their subsequent commercial sale in competition with the original. It is already, and should be, a criminal offense. Once a consumer, knowingly or unknowingly, buys a pirated tape, all he needs to do is play it back. He doesn't need a recorder of any sort. Pirated tapes are made by professionals, who could easily bypass the CBS chip. Indeed, if the record companies really do intend to issue unencoded versions of each release, all the pirate has to do is copy from the unencoded version.

Our Coalition, from its inception, has asked the Congress to distinguish between private, home recording by consumers, for noncommercial purposes, and piracy, which is done for completely different purposes and has completely different effects. We don't think the recording industry does anyone a service by suggesting that home tapers, who are its best customers, who buy the greatest numbers of records, tapes and discs, are pirates because they tape to preserve their albums or make them portable.

⁴⁵ This is not to suggest that the prerecorded DAT will replace the CD—only that its very reasonable price will, if competition is allowed to flourish, help bring down CD prices. When CD players were introduced about 6 years ago, they cost about \$1,500 at retail, but can now be had for less than \$150. The CD disc was introduced at about \$17.99 retail, yet six years later, on average, is still around \$15.99. Yet, a CD costs only about \$2 more to manufacture than vinyl album!

WOULD PERMANENT ENCODING COMPLY WITH CONSTITUTIONAL SPIRIT AND REQUIREMENTS?

As the Register of Copyrights has recently testified, the DAT provision is at variance with at least the policy implied in the constitutional "Limited Times" provision regarding copyright protection.⁴⁶ Article 1, Section 8, clause 8 of the Constitution instructs Congress "to promote the progress of science and the useful arts, by securing for *limited times* to authors and inventors the exclusive right to their respective writings and discoveries." The balance between the copyright holder and the consumer is disrupted by a technology requirement that essentially grants the copyright owner the right to prohibit a user of the work from making copies for the encoded recording's lifetime. Certainly, a straightforward amendment of "a federal copyright statute which purported to grant copyright protection in perpetuity would clearly be unconstitutional."⁴⁷ Skillful drafting should not be allowed to circumvent the constitution and create such unlimited exclusive rights.

THE AMERICAN PRESS AND PUBLIC WANT THE DAT

Attached to my statement today are only some of the editorials that have been written in the nation's newspapers, condemning the anti-DAT legislation as an unwarranted attack on progress and new technology. These newspapers include the *Baltimore Sun*, *Boston Phoenix*, *Buffalo News*, *Cincinnati Post*, *Cleveland Plain Dealer*, *Kansas City Star*, *Kentucky Post*, *Los Angeles Herald-Examiner*, *Los Angeles Times*, *Phoenix Republic*, *Portland Oregonian*, *St. Louis Post Dispatch*, and *Washington Post*. Some of the less well-known newspapers include the *Alexandria, Louisiana Daily Town Talk*, the *Champaign News-Gazette*, the *Midland, Texas Reporter Telegraph*, and the *Laramie, Wyoming Boomerang*.

These newspaper editorials really get to the heart of the matter. The *Baltimore Sun* said on May 10:

What's being said now about digital tape was said before about VCRs. But the movies are making big money, at the box office, in video cassette sales and rentals, including re-rentals of favorite films. What came from Hollywood before is now blowing through the record companies' speakers: Hot air.

The *Buffalo News* said on April 12:

Instead of seeking ingenious new ways to hit the small consumer, the music industry should be pressing for better enforcement of the law against the operators of large-scale illegal recording businesses. Those are the real predators on the industry, not the small consumer.

The *Kansas City Star* said on March 11:

The Supreme Court has upheld home taping. After many, many hearings Congress has not approved legislation to outlaw it. This should be enough; the message is that rights of the public should not be curtailed and that gains in technology should benefit consumers.

The *Los Angeles Times* said on March 27:

Consumers should be able to purchase these machines with their full capabilities, and they should be able to make copies for their own private use. Commercial piracy, which is the real problem, can be thwarted in other ways. Besides, there is scant evidence that home taping is anywhere near the problem that the music industry insists it is.

Congress should not try to legislate against progress. History shows it doesn't work. Nor should it.

The *Phoenix Republic* said on April 14:

Considering that the Hollywood crowd now is making upward of \$5 billion a year off the videotaping business it once fought so hard, perhaps the only protection the recording industry needs is from itself.

⁴⁶ See Statement of Ralph Oman, Register of Copyrights and Assistant Librarian for Copyright Services, Before the Senate Subcommittee on Patents, Copyrights and Trademarks, and the House Subcommittee on Courts, Civil Liberties, and the Administration of Justice, 100 Cong., 1st Sess. at 19 (Apr. 2, 1987).

⁴⁷ Nimmer on Copyright § 1.05[A].

And finally, the Laramie, Wyoming *Boomerang* aptly summed up the entire debate:

The Supreme Court, in its decision to allow home videotaping of telecast movies, was a step in the right direction. The anti-taping house bill is a step backward.

Consumers have been no less outspoken. The June, 1987 issue of *Stereo Review* magazine, on newsstands now, carries a phalanx of letters complaining about the recording industry proposals. Like the editorials, these letters hit quickly at the heart of the matter. Here is the observation of Joseph Cooper, of Santa Barbara, California:

"Things are getting curiouser and curiouser!" exclaimed Alice regarding the CBS copy-guard system for audio recordings. "First sound engineers developed recording techniques that come ever so near to perfection. Then they invent digital recorders that make nearly perfect copies. And then, so no will want to make copies with his expensive new digital audio tape deck, they propose to spoil the recording they worked on so diligently in the first place."

"Don't you see, my dear," the White Rabbit explained, "the people who buy and copy the popular music won't be able to hear that anything is wrong with their records. Only the lovers of classical music will notice the missing frequencies, and they are not the ones that record companies are worried about! It makes perfect sense."

In addition, I have attached to this statement copies of letters submitted by small record companies, others in the music business, and consumer audio magazines who have broken with the recording industry's "party line" about the anti-taping chip.

THE DAT LEGISLATION IS UNWISE AND UNCALLED-FOR

Let me be perfectly clear. If the anti-DAT legislation before these Subcommittees is enacted, you will kill a new technology in its cradle. We believe there is no reason to stop, limit, or restrictively define technology, and even less justification for the federal government doing so for reasons other than health, safety or public welfare.

There is no precedent for the U.S. Congress to ban a new product on any other grounds. Congress should not depart from this very wise precedent with this anti-DAT, anti-technology legislation. We urge you to examine this subject very thoroughly and in detail; as you do, the anti-DAT legislation will become even less defensible and more outrageous as public policy action.

Thank you.

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C.,
Washington, DC, July 10, 1987.

ANTIONETTE COOK, Esq.

Subcommittee on Communications, Committee on Commerce, Science and Transportation, U.S. Senate, Hart Senate Office Building, Washington, DC.

DEAR MS. COOK: Please find enclosed my responses, on behalf of the Home Recording Rights Coalition, to the Subcommittee's questions.

I would be happy to answer any further questions or provide additional information as the Subcommittee requests.

Sincerely,

CHARLES D. FERRIS.

Enclosures.

RESPONSE OF CHARLES D. FERRIS TO QUESTIONS OF SENATE SUBCOMMITTEE MEMBERS

Question 1. Mr. Ferris, you claim that the legislation before us today would effectively kill the DAT as a format. If prerecorded DAT's were available, why wouldn't consumers purchase them just as they do prerecorded audio cassette tapes and videos?

Answers. The examples given in the question are the best illustrations of why the DAT will be accepted as a consumer product at first mainly through its recording ability, even though its ultimate exploitation will be primarily through playing prerecorded material. The audio cassette tape was developed by Philips as a business dictation format. It was refined by "hardware" manufacturers as a musical recording format, but was still resisted by "software" proprietors. Indeed, after the

Dolby "B" noise reduction system was perfected, recording companies would not apply it to their prerecorded tapes until its utility was demonstrated by an American hardware manufacturer, Advent Corporation, that produced a special line of prerecorded tapes demonstrating this process.

It was only after the recording industry followed its customers into tape technology that the market for prerecorded audio cassettes bloomed. People made recordings of their home albums, to play on their car stereos and on their portable players. Later, they filled the demand for such recordings by buying prerecorded tapes, even though the quality of such tapes is still usually inferior to that of recordings made at home. Without home recording, the audio cassette format simply would not exist.

The experience in video is even more dramatic. At about the time video recorders were introduced, other video systems were introduced that did not provide for home recording. Consumers emphatically chose the VCR, because they wanted the freedom to record programs for their own personal use. As other systems withered away or failed to grow, the VCR became a mass product, creating a huge market for prerecorded software. Now, this market is worth more than \$5 billion annually—more than the proceeds from theatrical movie exhibition. None of this would have been possible had VCRs lacked the ability to record.

Question 2. Mr. Ferris, it is a fact that American intellectual property law does accord the creators of music copyright protection. It is also a fact that those creators are not compensated when one person tapes a recording and gives the tape to another person. Why shouldn't the creator receive some sort of compensation from the person who makes the copy?

Answer. Neither the copyright law nor the constitution provides for compensation to copyright owners for every single use of copyrighted material. For that matter, neither does the patent law, as construed by our courts (even though the scope of patent monopolies is greater than the scope of copyright). What the copyright law provides is a reasonable opportunity for the copyright owner to be compensated for placing his works in the stream of commerce, so that the incentive to create is maintained, in accordance with the constitutional purpose of copyright protection.

In the absence of a right to compensate for each use, it is an open question whether there is any right being infringed in the situation posited, and a further question whether there is any means by which the government could or should provide for enforcement of such a right. As to whether or not such a right should exist, it is by no means clear from the example given that this transaction harms, rather than helps, the copyright owner. There is no way of knowing whether this transaction has displaced a potential sale that would have generated revenue to the copyright owner. There are many indications, however, that this transaction is of financial benefit to the copyright owner. First, the fact that friends would be interested in this music might have stimulated purchase; in the absence of such a consideration perhaps neither party would have made any purchase. Second, our surveys have shown that this sort of sharing very often has a promotional effect similar to the performance of recordings on the radio. Indeed, it has been said by some artists who cannot count on radio airplay that they hope to become known through people hearing tapes of their recordings under such circumstances. And indeed, the surveys showed that people very often buy an entire work of an artist or composer after receiving a tape of only part of it, or buy another album of that artist or composer.

Even assuming that the sort of taping mentioned in this question would generate a right, its vindication through legislation would be impractical or unfair. Most home taping is from prerecorded material that the tapper already owns. The tapper keeps both the original and the copy. Another large segment of taping behavior is from radio broadcasts, which the recording industry considers promotional. Furthermore, even if one accepted the premise that a copy made for another is less legitimate than a copy made for oneself, there is no way that an anti-taping chip can distinguish among copies intended for the owner of the prerecorded material and copies intended for a friend. Therefore, like royalty tax proposals, the anti-taping chip is incapable of fairly or effectively discriminating among different types of consumer home taping.

Question 3. Mr. Ferris, in your testimony you state that the most common use of audio tapes is to tape from albums the person already owns. Do you have any figures on the number of people who borrow albums belonging to another person and copy them or give people copies of selections on albums they have purchased?

Answer. Yes. Attached¹ please find a copy of the report of Yankelovich, Skelly and White on audio home taping practices. Please see pages 5, 16, 47-48, 54.

¹ The attachment was not reproducible and is in the Committee files.

Question 4. Mr. Ferris, if it is true that the most people tape from albums that they already own, what is the purpose of dual-well recording machines?

Answer. 1. Make a copy to keep in the car, boom box or Walkman.

2. Edit out undesired songs from albums.

3. Edit together selections from several prerecorded tapes.

4. Edit together favorite material from CD, vinyl albums, and prerecorded tape.

5. Guard against destruction of prerecorded tapes by "tape-eating" recorder/player.

6. Sequential play (up to 3 hours continuous play, unattended).

7. Demonstration tapes by amateur or semi-pro bands.

8. To duplicate childrens' performances for all the relatives who want them.

9. Same uses as single well decks. The fact that people buy a dual well deck does not mean that they will use it exclusively, or even at all, in the dual well mode. Often, these decks are included in all-purpose systems. Often the predominant or only use will be playback of prerecorded material.

When dual well audio decks were introduced, sales of prerecorded audio tapes were only a fraction of those of vinyl record albums. If it were true that dual well decks were used only to copy prerecorded tapes in ways that displace sales, the prerecorded cassette would have shriveled as a commercial product. However, exactly the opposite happened. Today, the prerecorded cassette is the primary revenue producer for the recording industry, and outsells the vinyl album 3 to 1.

Question 5. Mr. Ferris, you contend that DAT does not allow perfect digital-to-digital clones to be made. However, isn't it true that the DAT recordings are far superior to anything currently available and that the difference between a DAT recording and the original is practically undiscernible?

Answer. The DAT offers many opportunities and improvements as a format. In terms of absolute sound quality, however, it is not true that DAT recordings are "far superior" to anything currently available. For less financial outlay than the current retail price of DATs in Japan, consumers in the U.S. can make similarly high quality recordings by any of the following means: Using any VCR with an outboard digital "PCM modulator;" Beta Hi-Fi or VHS Hi-Fi audio-only recording; a "high end" analog cassette deck; or an open-reel analog audio recorder. The major advantages of DAT over these formats are in convenience, compactness, and potential for prerecorded product, rather than in absolute sound reproduction.

The difference between the sort of DAT recording that the format allows and the original is about 10dB, a measurable increment in signal to noise ratio. Whether this increase in noise level is audible depends on the type of music, the sensitivity of the listening system, the amount of environmental noise, the relative loudness of the passages in question, and the amount of noise already on the recording. The slight increase in noise attendant to a home recording on DAT gives an absolute advantage to prerecorded DAT tapes, which will be able to utilize the full capacities of digital recording and playback. In general, however, we have never seen any positive relationship between the fidelity of the music system and the "damage" alleged from home recording. In our view, the case against home recording is primarily anecdotal, and springs from stories about "kids" trying to save money by making copies on inexpensive equipment. This has nothing to do with DAT.

Question 6. Mr. Ferris, is it true that the Japanese manufacturers have developed DAT machines capable of digital-to-digital copying?

Answer. Before the DAT Conference standard was finalized and accepted, manufacturers built various prototypes taking various approaches. We do not know the capabilities of any such particular machines. However, all machines that have been offered for sale observe the protections against digital-to-digital copying contained in the DAT Conference standard.

Question 7. Mr. Ferris, can't the digital-to-digital copy prevention code that was agreed to at the DAT conference be circumvented by connecting the DAT machine to your receiver, (thorough digital-analog-digital copying)?

Answer. Engaging in digital-analog-digital copying does not "circumvent" the DAT conference; such copying is deliberately left unaffected by the DAT Conference in order to preserve the basic consumer right to record for private, non-commercial purposes. It is not possible by the means described in this question, however, to make a digital-to-digital copy. Even when the output from a digital source such as prerecorded DAT is fed straight to a digital amplifier, the DAT Conference specification requires that any such "outboard" device pass along into its digital output the flag code that prevents digital-to-digital copying. Therefore, even though the connection would be through such an amplifier, the flag code would still be recognized by a second DAT and digital-to-digital copying would be defeated.

Question 8. Mr. Ferris, have the Japanese manufacturers agreed in writing to require the digital copy prevention code in all of the DAT machines exported to the United States?

Answer. Manufacturers in Japan have assured government officials that they will comply with the digital-to-digital provisions of the DAT Conference standard with respect to export of DATs (and in other respects as well).

Question 9. Mr. Ferris, do you agree that the distortion problems caused by the CBS copy-code scanner can be minimized by the engineer encoding the recording?

Answer. No. Any attempt by a recording engineer to minimize distortion by switching or phasing the encoding in or out will itself create "transients" (distortion attendant to sudden changes such as switching) that by themselves add distortion to the signal. For a thorough discussion of the inevitability of distortion from a system such as CBS's, see the article by David Ranada in the July *High Fidelity* magazine (copy attached).²

Such attempts also would probably degrade the signal to noise ratio of the master tape. It is unlikely that a recording engineer would be able to do such switching while the live performance is being first recorded. Therefore, such switching would entail extra stages of re-dubbing. Since, as we understand it, the actual encoding circuitry of the CBS filter operates in an analog domain, even a "pure digital" recording would pass through an analog stage when subject to the CBS encoding, so would suffer in signal to noise ratio. Adding additional stages in order to moderate the distortion of music would mean passing through an analog stage an additional time or several times, increasing the noise each time. This affect would be in addition to the "transients" created by the switching process.

Senator INOUE. Why do you not play the music. Thank you very much, Mr. Ferris.

Before proceeding, I would like to assure all of you, your full statements will be made part of the record.

Without objection, so ordered.

We have a very important vote going on at this moment. It is a cloture vote, and we want to get the business on the road, if you know. So if you do not mind, we would like to take a short recess.

But before I do, are you putting that equipment in a record also?

Mr. FERRIS. If that is your pleasure, Mr. Chairman.

Senator INOUE. Without objection, it will be received.

[Recess.]

Senator INOUE. The Chair recognizes Senator Gore.

Senator GORE. Thank you very much, Mr. Chairman. I want to echo the sentiments you expressed when these two witnesses came to the table. They are both good friends, and this is quite an interesting experience to see such able advocates squaring off at the witness table.

Mr. Ferris, I was interested in your statement when you said that you pointed with pride to the machine here, and claimed that it was mighty good, that it contained an analog circuit which degraded the quality of the recording.

Is that an admission by the manufacturers that it would be a serious matter if it did not degrade the quality of the recording?

Mr. FERRIS. No, Senator Gore, it was in my mind much more of a recognition, by the manufacturers, of the reality stated to them by the recording industries, worldwide, that they would boycott this machine of their software unless they agreed to something that would degrade the quality of the copy digitally that could be made.

And as Mr. Berman in his testimony said, that there is no software or recordings available for these, therefore, they can only tape; they can only copy.

² The article was not reproducible.

Well, it is because his companies have stated, even up to now, that they are going to withhold software from the digital-audio tape machine unless it has a chip in it that will prevent it from recording.

So to some degree, it was a recognition of that united front of the recording—

Senator GORE. In return for their agreement to what?

Mr. FERRIS. What they did is, they uniformly agreed to design these machines to—

Senator GORE. No, no, in return for—did the recording industry—you stated in your testimony that there was a massive agreement, and everybody shook hands, and all the problems were resolved.

What exactly did the recording industry agree to?

Mr. FERRIS. Several dozen companies, and I am not certain of their composition, but they were in the industry worldwide, both software and hardware, met and made this agreement, which is the so-called DAT Conference, which is the agreement that said, the design of all digital-audio tape machines will not permit a digital copy of a digital source of music.

Senator GORE. The way you use that phrase, the DAT Conference, I can almost see it in the history books.

Now, you give the impression to the subcommittee that at this historic conference all of the problems were resolved, and therefore, there wouldn't seem to be much point in going forward.

Mr. Berman, did the industry you represent agree, as Mr. Ferris tell us, or as he gives us the impression you agreed?

Mr. BERMAN. No, Senator Gore, we have not. To my knowledge, we were not a party to it.

The DAT Conference standard, the so-called flag code, the fact that the digital-audio tape recording has a different sampling rate than a compact disk, this has nothing to do with record companies.

I really do not know where all of this comes from. I would like to think that it comes from a recognition that the interests of the copyright owner in some way should be protected.

Obviously, it does not come from that. It comes from some imaginary set of circumstances Charlie has conjured up. But beyond that, I want to point out to you that Charlie has already testified that he has advised his clients that it was unnecessary to do those things, to protect the copyright owner.

And so I do not find a whole lot of comfort in that.

Senator GORE. What about the assertion that this analog circuit degrades the quality? Is that easily bypassed?

Mr. BERMAN. Yes, it is easily bypassed. But let me get to the question of the quality. If one were to tape from a cassette to another cassette in the current analog form, you would get, in terms of your dynamic range, the quality, you would go from 65 Dbs down to 61 Dbs.

If you were to tape from a DAT machine to pass through analog and go to cassette, you would go from 95 to 65. If you were to go from a CD and pass it through analog onto a digital-audio tape, you would go from a dynamic range of 95 to 91.

In other words, the difference between current analog taping, which would result in a copy, the dynamic range of which was 61

Dbs, in comparison to this process, which would produce a dynamic range of 91 Dbs.

That is an extraordinary difference.

Senator GORE. What about the potential for bypassing the analog circuit?

Mr. BERMAN. The technology already exists for equalizing the frequency sampling rate differences. And beyond that, the flag code, which is apparently built into this, can be bypassed through a personal computer, for example.

And once it is bypassed, that copy, the resultant copy, no longer carries the flag code, and every subsequent copy can be copied in exactly that same form.

Let me point out one other thing, Senator Gore. This is the so-called conference standard. I do not know who has agreed to this standard. Certainly the U.S. record companies have not.

I do not believe the Japanese record companies have.

Why could not the standard be negated tomorrow by a decisions of the manufacturers?

Senator GORE. That is a good point.

Mr. BERMAN. And is this standard one that would apply to the Koreans and the Taiwanese and anyone else who, six months from now, would have the low end model.

Senator GORE. Well, maybe the DAT Conference will not make it into the history books after all, if what you say about it is correct.

Mr. Ferris, you held up the prerecorded tape to your ear a moment ago. This DAT tape, smaller in size, higher in quality, do you anticipate that the primary attraction of the DAT machine would be to play prerecorded DAT tapes?

Mr. FERRIS. Yes, exactly as the predominant use of every previous generation of recording machine.

Senator GORE. Mr. Ferris, we know each other well. Do you really believe that?

Mr. FERRIS. I certainly do. I really do, Senator. I think people buy hi fidelity stereo equipment to have the freedom to record. But the predominant use is as a playback mechanism.

Senator GORE. Do you think DAT would in that event replace compact disks?

Mr. FERRIS. I do not know. I do not know. I know some people claim that the compact disk is always going to be the favored medium for music.

Others do not. But the market is going to determine that. I mean, someone who is going to pay \$1,300 for one of these DAT machines, which is what they cost now, I think is going to have to really enjoy high fidelity music, to be an audiophile, to expend that amount of money to do it.

But those that first bought compact disks players were in the same category they were sold for \$1,100. And, the VCR was the same. It is used now primarily as a playback device, although it was purchased initially because people wanted the opportunity and the freedom to be able to record from television.

But now it is predominantly used as a playback device. Every recorder or playback machine people buy primarily for its capacity as a recorder, but it turns out to be a tremendous opportunity and a revenue stream for those that put out the prerecorded software.

I see no reason why this machine will be any different from the history of those other new technologies.

Senator GORE. Mr. Ferris, if you went to a college dormitory, to use the example which you referred to as a cliché before, I happen to think there really are college dormitories, and there really are people with tape machines and so forth, if you went to a college dormitory and found someone buying a compact disk, and then recording 100 copies on DAT tapes for the rest of the dormitory, would you see anything wrong with that?

Mr. FERRIS. Is there payment involved? Is the person with the DAT selling those tapes to other members in that dormitory?

Senator GORE. Well, let's take two examples. Let us first take the example where the person who bought the compact disks is not charging for the taping at all.

The companies that sell the DATs are charging for the machines, and the stores are charging for the blank DAT tapes, but the person who initially purchased the music is the only person who is paying for the music, and that person is not charging the other 100 people, who then make perfect copies of that music.

The only money the person who desires a copy is paying money to your clients, and to retailers, but they are not paying money to the other person in the dormitory. But there are 100 copies in the dorm.

Do you see anything wrong with that?

Mr. FERRIS. If there is no commercial enterprise involved, and that is a personal exchange as a book can be exchanged or whatever—

Senator GORE. The only commercial enterprise is with your clients. The only commercial transaction in this case is with your clients. They are the ones who are getting the money.

But the student who first purchased the compact disk is not getting money from the people who are paying your clients. The person who created the music is only getting money from the initial purchaser; the other 100 are not paying the person who created the music. They are paying your clients instead.

Do you think there is anything wrong with that situation?

Mr. FERRIS. No, and there is not anything in the copyright laws that says that is illegal.

Senator GORE. Well, the person who created the intellectual property has been deprived of the opportunity to sell that intellectual property to 100 people who are enjoying it, listening to it constantly. But they are not compensating the creator of the intellectual property.

Does that bother you at all?

Mr. FERRIS. No, it really doesn't, Senator, and let me attempt to describe what I think is the different dynamic that I think makes a difference in the recording and music business.

Senator GORE. Can you do it briefly?

Mr. FERRIS. I will attempt to. There is a synergy, I think, and the data developed over the years before the judiciary committees, as you know, is replete with statistics in this area, that people who listen to artists and get selections from someone else's tape, even in the dormitory, in the environment that you described but did not pay for the original, and it was just an exchange of goods, the like-

lihood of them going out and purchasing the next offering of that artist is far greater because they became familiar with that artist.

Senator GORE. Oh, there will not be a next offering, Mr. Ferris, because they have not been compensated for the first one.

Mr. FERRIS. Well, Senator, as you well know, in the music industry, the music industry gives away its product to radio stations free. As a matter of fact, to a great extent, it has gotten into trouble at times, historically, of going beyond that.

Senator GORE. That is not true, Mr. Ferris.

Mr. FERRIS. The promotional activities that have been developed in the hearings before these committees over the past three decades have provided examples of attempts to get the music played over and over and over again.

Senator GORE. They pay for each time they play it.

Mr. FERRIS. They pay who for each time they play it?

Senator GORE. There is a compensation through ASCAP and BMI.

Mr. FERRIS. That is for the composers and authors; not the performers.

Mr. BERMAN. I hope this results in a performance right for the owner of the sound recording, and that we can count on Charlie's support.

Mr. FERRIS. I would definitely support a performance royalty, Senator.

Senator GORE. Let me turn to a different question, because my time is running out. The Chairman is very patient.

I read a science fiction story many years ago about a new kind of Xerox machine that could reproduce objects. The Chairman jokingly suggested the possibility of putting your DAT machine in the record.

If the technology was available which could easily and cheaply reproduce identical replicas of the machines made by your clients, and a student in a dormitory could purchase one and then it could be replicated, and 100 identical machines could be created with no compensation given to the original manufacturer, would you see anything wrong with that?

Mr. FERRIS. Well, it is unreal. I do not think there is a limited Federal property right created in that machine.

Senator GORE. A few years ago, the DAT was unreal also, but just given hypothetical, would you see anything wrong with that?

Mr. FERRIS. Being able to duplicate these machines?

Senator GORE. Yes, and have cheap copies of the machines without paying the original designer and manufacturer?

Mr. FERRIS. I think that happens every day of the week, when people take these machines, and they will reverse engineer and do exactly that.

Senator GORE. No, no, you are escaping the hypothetical. I want you to deal with the example that I gave you.

If it were possible to cheaply and easily create duplicates of these machines, without paying money to the original designer and manufacturer, and one student buys one and then 100 others in the dormitory copy it without paying anything to the original manufacturer, would that be okay with you? Would you see anything wrong with it?

Mr. FERRIS. I cannot come up with a real answer, Senator, because I do not understand. That happens today with these machines.

Senator GORE. No, it does not happen today.

Mr. FERRIS. I am sure we will come up with a solution with that.

Senator GORE. Do you know why you are having a problem? Of course the reason you are having a problem is, A, you would see something wrong with it; it would be very clear to you.

And B, the reason you do not want to say that is because the analogy is almost exact.

And C, the difficulty a lot of people have in understanding why the practice we are talking about here is wrong is that they labor under the impression that intellectual property is somehow less deserving of protection than tangible physical property.

But artists who create intellectual property do it for a living. They have rights in that property. And if it is taken from them without compensation, they have been deprived of their livelihood, just as would be the case if the creator of real, tangible, physical property had that property taken from him without compensation.

It is exactly the same situation.

Mr. BERMAN. Senator Gore, can I rescue Charlie here?

Senator GORE. Yes, I would like to hear your response, Mr. Berman, and then I believe my time has expired.

Mr. BERMAN. I will give a more tangible example. Today, when the manufacturer of the DAT recorder is also likely to be the manufacturer of a cassette player, maybe even a turntable, maybe a car cassette player, maybe a compact disk player, does that same manufacturer give out in its different forms those mediums after you have bought one?

When you buy a compact disk player, do you get a turntable, a car cassette player, another cassette player?

That is what he is asking, happens to music. And if it is okay to happen to music, then the same principle ought to be at work for the hardware manufacturer.

He wants to make a copy of prerecorded music for the various formats that it is available in. In that case, why doesn't he sell somebody a compact disk player and give him the cassette player and the DAT player and the turntable?

I do not understand the difference, except to go back to your point, that one is tangible property, and one is intellectual property.

And in fact, in your example, I have no doubt that the people who manufacture the machines would find a way to enforce their patent rights. And what we are trying to find is a way to enforce our copyright.

Senator GORE. Thank you, Mr. Chairman.

Mr. FERRIS. Could I save myself from that rescue, Mr. Chairman?

The entire discussion here is really a copyright discussion and the nature of the limited property right granted to intellectual property. I accept that, because these are really copyright issues.

A Federal grant of a copyright monopoly by the Federal Government in the Constitution, has as its primary purpose the encouragement of the widest dissemination of the creative product.

That is the real purpose of the copyright law; and the means by which you do it is to channel sufficient profits and the rewards to the creator to continue them in the business of creativity.

And I think those primary purposes and goals are valid and good. And I think these machines and their predecessors, historically, in every generation of technology, enhances that encouragement of creativity because it disseminates most widely that particular product to more of the American public.

And I think that that is what really should be emphasized—I think that really is what should be encouraged. And I think these DAT machines reflect a great deal of creativity, Senator Gore, that went into the development of these machines.

They did not just develop out of thin air. An awful lot of creativity went to develop these machines, to develop a medium by which the music industry and the artists are going to be able to reach the public most widely.

The fundamental issue here is an attempt to impose a tax and a royalty, which the discussion here today has reconfirmed. That is the real agenda to tax the hardware manufacturers, the tape manufacturers, to siphon it off the consumers to the copyright holders.

Why then should not the patent makers, the people who have the patents on these machines, have the same type of a claim that for everytime a piece prerecorded music is sold to be played on the DAT machine, that the patent holders have a claim through a tax on the prerecorded music. It is the patent holders that created the particular machines that permits that music to be played.

There is always going to be apparent friction and tension between the hardware and the software manufacturers, but the remedies are the patent laws on one side, for the hardware manufacturers, and the copyright laws on the other side, for the software manufacturers.

I think they stand autonomously. I think the copyright laws, as they presently exist, and which specifically validate home taping, provide a good balance.

And if there is an imbalance and performers do not get sufficient reward when something is played on the radio, I think that should be addressed directly to those who use it for commercial value, rather than to attempt to put a tax or an impediment or a ban on a new set of technologies.

Senator INOUE. Senator Wilson.

Senator WILSON. Thank you, Mr. Chairman.

Mr. Ferris, do you believe that there should be larceny laws on the books?

Mr. FERRIS. Yes, Senator.

Senator WILSON. Would we not, without them, encourage a wider dissemination of the ownership of certain articles?

Mr. FERRIS. Well, I do not know if you would, Senator.

Senator WILSON. Well, let me give you an example. Suppose you decided that a book is interesting enough to publish, and you published 5,000 copies.

And you put those in a warehouse preparatory to distributing them to retail bookstores.

If I break into your warehouse, and I steal one copy, you are injured, are you not?

Mr. FERRIS. Yes.

Senator WILSON. And the law says so?

Mr. FERRIS. Yes.

Senator WILSON. If I break in and steal two copies, you are doubly injured?

Mr. FERRIS. Yes.

Senator WILSON. And if I finally steal 50 or whatever the breaking point is in the law between larceny and grand larceny, there is a much more severe penalty.

If I break in and steal all 5,000, why, presumably you are greatly injured, and the law should punish me for what I have done.

Now a book is both a tangible thing, and also, it contains intangible property rights. If I break in and steal just one of your books, but then copy it, and run it off on a duplicating machine or some other reproduction device, which may very well be patented by the way, it may be that I can run off 5,000 copies, then if I can sell them, clearly, I have violated your copyright, have I not?

Mr. FERRIS. If you steal them then run off and sell 5,000 copies of it, yes, you have violated the copyright.

Senator WILSON. Let us suppose I got into a bookstore and buy a copy and then run off 5,000 and I sell them; that is still a violation of the copyright?

Mr. FERRIS. Yes.

Senator WILSON. But it is your contention that if I go into a bookstore and buy one and then run off 5,000 and give them away to 5,000 friends, or more realistically, 50 or 100, that that is no violation of the copyright?

Mr. FERRIS. Well, I think the copyright law might permit that such can be done. And there is a specific case in point where it has been done.

Senator WILSON. Do you think that it should be done? Do you think that that is in the spirit of those who gave the copyright protection?

Mr. FERRIS. Well, I think the question is a difficult one. I think that historically, Senator, the copyright law has made a division between commercial gain and private noncommercial uses.

And whether you have to have a specific payment of a dollar to cross over that line, I do not know.

Senator WILSON. Well, is not the basic point in both the larceny law and in the copyright law to protect the property right, in one case tangible, in the other case, intangible, in the case of the intellectual property, of the property owner?

Mr. FERRIS. Yes, absolutely.

Senator WILSON. All right, let us suppose then in the college dormitory example, I choose, and that Senator Gore has just questioned about, let us suppose that someone runs off 100 copies, or makes it possible for 100 friends to do so.

Now, it seems to me that the person we are trying to protect under copyright law is injured just as greatly whether you sell 100 copies or whether you receive no compensation for it.

The injury is the same. I mean, the injury in the warehouse situation is the same as if I were to sell or give away 50 copies of your book. That is 50 sales you will not get.

Mr. FERRIS. I think there might be a question of quantifying how many lost sales there would be. Whether everyone who received a copy in the dormitory would have purchased a record.

And I doubt that very much.

Senator WILSON. Well, where I differ with you is in your interpretation of the copyright law as having been given in order to achieve the widest dissemination.

I would agree in one sense, but it is to achieve the widest dissemination of intellectual properties by encouraging their production.

Mr. FERRIS. I agree with that.

Senator WILSON. You do not encourage their production if you do not give any protection to the property right of the person who creates the property; you give a disincentive to expend that kind of time and effort and money.

Mr. FERRIS. I do not think the present balance between the dissemination goals of the copyright laws, and the protection of proprietary interests of the copyright owners, Senator Wilson, are that much in imbalance.

Certainly, in the recording industry, when the rewards and the profits of the recording industry are as large as they have ever been; and they have recorded their highest profits in the last three and four years.

Now, they deserve all those profits, and profits are good. But I am saying that the notion is wrong that there is an imbalance in the copyright law from the dissemination goal, and the protection of proprietary interests. The imbalance cannot be that out of whack to have the data with respect to the economic viability of the record industry that presently exists.

Senator WILSON. Well, I think you are engaging in a hypothesis there, because these machines have not yet been available, but they very shortly will be. And that is precisely why we need to act now, I think.

Let me assist, though, I think perhaps Mr. Berman has a better idea of the injury that can occur.

Mr. Berman, Congress passed legislation a few years ago known as the record rental law to protect copyrighted music by outlawing record rental stores.

Is it true that Japan passed a similar law, but that it does not protect American music?

Mr. BERMAN. It is true. We have a record rental law here. It is true that in the copyright law in Japan there is a provision dealing with the rental of records.

It is interesting to see how the Japanese treat this, under Japanese law. You cannot rent for one year after its initial publication Japanese music. It is protected. But you can rent American music, and there is a reason for it; because Japanese music lovers want American music.

And what they do is, they rent it in one store, and take it down to the next store and get a copy of it. And that is the purpose behind the notion of renting music. It goes back to something—I thought I was at the wrong hearing when I listened to Charlie.

I thought I was at a hearing where Jack Valenti was testifying on the Betamax case. That is not what this hearing is about, and

Charlie has perverted what the Supreme Court has said, what Congress has said.

There is nothing in copyright law that deals with home taping in regard to audio. He is talking about some gratuitous report language involving a 1971 act.

And I am happy to introduce into the record something from *Nimmer On Copyright* that deals with this so-called exemption. It is ephemeral. It exists only in Charlie's mind.

The Senate never acted on this. And when the Congress, in 1976, revised the copyright law, it made no mention of this. There is no exemption.

The very best one can say about audio home taping in regard to the law is that it could conceivably be a fair use. I happen to believe that it is not, and it would be a perversion of the doctrine of fair use, which is a very narrow one.

But the fair use doctrine, it is true, was applied in the *Sony Beta-max* case, and it was applied in a very narrow set of circumstances. In a 5 to 4 decision the Supreme Court said it was okay to time shift off the air.

It defies logic when you apply the concept of time shifting to sound recordings. People do not tape music to listen to it at 11:00 o'clock instead of 8:00 o'clock.

You would not need 300 million blank cassettes a year. It is being librated. Music is forever. It is being played again and again and again. And that is the difference.

Senator WILSON. Mr. Berman, let me ask this: In his direct statement, Mr. Ferris portrayed this effort as something akin to the Luddites breaking the spinning wheels.

I do not quite see it this way, but perhaps you can think of some other instances in which Congress has passed laws to control technology or an analogy that would justify our taking the step.

It seems to me, this is not anti-technology, it is pro-copyright.

Mr. BERMAN. In fact, we would welcome the DAT technology, provided it had a measure of protection for the copyright owner.

There have been instances in the past. Congress passed the All-Channels Receivers Act that required television sets to accommodate a certain type of reception.

Congress had dealt with electronic eavesdropping and with computer hackers. Technology, incidentally, is not benign. There are consequences.

And in this case, there are serious consequences.

Senator WILSON. Mr. Berman, I understand that you are not here today in the role specifically as a representative for organized labor.

But let me ask your opinion. How would the introduction of DAT technology without safeguards affect the job opportunities of those who form the pyramid of support necessary to create works of art, specifically, sound recorders?

Mr. BERMAN. It was testified to yesterday, Senator Wilson, by Victor Fuenteabla, who is the president of the American Federal of Musicians, and Jack Golodner, of the AFL-CIO, that in fact it would have a disastrous effect.

And I think they spoke very eloquently in their own behalf.

Senator WILSON. And that would be because of the displacement of sales.

Mr. BERMAN. The displacement of sales, yes. When one thinks about the nature of the quality of the copy that would be available, why would people buy prerecorded music when they could get, simply by taping, the exact same quality as if we sold it to them, and taping is cheaper?

Because when you tape, you do not pay the songwriter, you do not pay the artist, you do not pay the record company.

In fact, if I can borrow this tape, I was very interested in this response to my demonstration, this prerecorded DAT tape. There is a DAT machine.

Someone is going to spend \$1,200 to \$1,300 for that machine. Someone is going to go out and buy a prerecorded DAT tape; I do not know how much it is going to cost, \$12 or \$15. There are people being paid in that transaction.

In this transaction, there are only two people being paid: The manufacturers of the blank tape, and the manufacturers of the hardware.

The people who created the song are not being paid. The people who recorded the song are not being paid. That is the difference.

It is true, we need the machines. I have no doubt about that. And the machine should respect the property right of the recording in the music.

Senator WILSON. Mr. Ferris, I will just ask this final point—the Chairman has been generous.

But do you really doubt that a displacement of sales is caused by home taping, and a displacement that is a significant violation of copyright sufficient to actually threaten the livelihood of the recording artists and those who would seek to finance their efforts in recording?

Mr. FERRIS. I do not think, Senator Wilson, that the net benefit and harm issue has been fully documented to the point where it would give you certainty.

Mr. Berman talked about 300 million blank tapes sold in the United States last year, and 345 million prerecorded music tapes sold last year.

I will accept that. I do not know how many tapes were sold. But of those 300 million blank tapes that were sold, the record is clear that over half the uses of those tapes have nothing to do with prerecorded music. So you are eliminating 150 million—

Senator WILSON. Well, they probably do not require that quality of fidelity either.

Mr. BERMAN. Then there is no reason to worry about the copy code scanner. If the taping is not being done from music, it has no impact.

Mr. FERRIS. Well all I am addressing is the harm question that you raise, Senator, from the standpoint of, what are the uses of the tape.

And you talked in your opening statement about the fact that one should be able to take a disk that they bought and go home and put it on a cassette for their Walkman and enjoy it there.

Now, of the half of those tapes that remain after you eliminate your non-music uses, over half of all the home taping of music is

from the records that the home taper bought. They customize their tape. They take selections from each, and they make a 90-minute tape out of three albums.

What I am talking about, you are getting down to a very small percentage or segment who are the teenagers and the dormitory users. Now, I am saying those questions are very, very hard to viscerally ascertain. But the notion that someone is going to pay \$1,300 and then, as Jay said, spend \$13 to \$15 for each blank tape, buy 100 of them to pass out in the dormitory is equally hard.

I do not think the economics of that make much sense when you can buy the compact disk much cheaper.

Senator WILSON. Mr. Ferris, why then do they advertise, "beat the system?"

Mr. FERRIS. Well, who advertises that? The manufacturers do not advertise that, Senator Wilson. I mean, you can't stop Slick Freddy down in the distribution chain, you cannot control people advertising in a way that attempts to get someone in a store to buy things.

I do not know if it has that much impact anyway. Maybe it does to sell, but I do not think it determines the behavior of the predominant users of these machines and the taping.

I just think the notion——

Senator WILSON. I was interested in the pages included in Mr. Berman's direct statement that contained several advertisements—speaking of slick, quite slick.

Mr. FERRIS. I have not seen them, but I am sure none of them are manufacturers.

Senator WILSON. I am sure he will be delighted to share them with you.

Mr. FERRIS. I am sure none of them are manufacturers. I am sure these are retailers that have a unique way of advertising to get people into their shops.

Senator WILSON. Unique? Thank you, Mr. Chairman, I think I should let someone else question.

Senator INOUE. Thank you. Senator Kerry?

Senator KERRY. Thank you, Mr. Chairman.

I know we have other panels, and we want to move on here, and I regret that I have to go over to the Foreign Relations Committee to vote out the State Department authorization bills, so I cannot stay for the whole thing.

But I would just like to ask if I can a few questions. I appreciate the quality of the advocacy here from the two friends.

I would like to ask Mr. Ferris, following up a little bit on a question from Senator Gore, you said in answer to his followup questioning, the credulity of whether or not you really believed it, that the predominant use of the DAT is going to be for playback, and you still assert that?

Mr. FERRIS. Yes.

Senator KERRY. If the predominant use is in fact for playback, why is there a problem, since playback is not affected by the copy code at all?

You can playback all you want. It is not a problem.

Mr. FERRIS. It will not be a problem.

Senator KERRY. Well, then, what are we arguing about?

Mr. FERRIS. Well, people buy these machines as they bought every previous generation, as they bought the VCR, for the freedom to make a recording.

The predominant use always turns into a playback mechanism. But you cannot sell a recording machine, Senator, that does not record.

Senator KERRY. Well, the breakthrough here, the technological attractiveness of this, is the quality of sound, is it not?

Mr. FERRIS. Yes. Well, it is the quality of the sound. But if this DAT cannot record, it turns into—it has the same capability as a compact disk, which can only play back.

The DAT can do what a compact disk does, but it can record as well.

Senator KERRY. Well, let me pursue that, in light of your stated theory about why people are trying to sell and how they are trying to sell.

You said the governing theory is the effort to get the widest possible dissemination; correct?

Mr. FERRIS. I think that is the goal of the copyright law, yes.

Senator KERRY. But that was never intended to be dissemination without compensation, correct?

Mr. FERRIS. Correct.

Senator KERRY. And in keeping with the notion of wide dissemination, you talked about this special synergy that home use and multiple taping increases sales, correct?

Mr. FERRIS. That is correct.

Senator KERRY. And the people who are concerned about the sales of the music, and the sales of the tapes that are prerecorded are the composers, producers, musicians, and ultimately the distributors; correct?

Mr. FERRIS. That is correct.

Senator KERRY. Those folks are therefore the ones to really be empowered to make a judgment about sales, whether they are going to get more sales or less sales of their music.

The person who sells this machine does not care about that. The have sold the machine. That is it for them, correct?

Mr. FERRIS. Their interest is in the sale of the machine and the popularity of the machines.

Senator KERRY. Basically terminates at that point in the sequence.

Now this encoder, and I am particularly concerned about this, because I have read some editorials and accusations about how this may be conjured up as a restraint in trade, and somehow, does not meet the standards of free market and all of that.

There is no restriction for the so-called stated purpose of use of these machines in placing an encoder in the DAT in the source location, and then sending it over here, unless the record companies, unless the compact disk producers, also encode.

Mr. FERRIS. That is correct.

Senator KERRY. So why should the Japanese not be willing to place an encoder in their machine, sell it, and let the record companies decide whether sales are increasing or decreasing, whether they are getting the widest dissemination or lesser dissemination,

by making the judgment as to whether or not they encode or do not encode?

Now, I take it some performing artists are deciding that. I think the Grateful Dead have negotiated a contract in which they say, do not encode our music.

So why should we not be permitted to protect that copyright that my colleagues have talked about and let the record companies make their own decision, which is all this does, leaves it entirely optional to them as to how they get widest dissemination, which is what you say you want, and how composers, performing musicians, et cetera, be compensated in the process.

Why should we not do that?

Mr. FERRIS. Well, in the first instance, if you mandated legislatively that all these DAT machines have this chip, whose function is to shut off this machine, if it receives the subliminal message, the notch, that the software recording industry will put in their music, I think those that manufacture, distribute and attempt to sell machines would recognize very quickly that you can't get someone to pay \$1,300 for a recording machine that cannot record?

Or might not be able to. The recording industry has a paranoia about this, and they say they are going to put notches in all their software, so it will shut off recording machines.

Senator KERRY. But that is not accurate. All existing music can be recorded with this machine.

Mr. FERRIS. That is right. Prospectively, everything prospectively would be affected.

Senator KERRY. Okay, so it is not accurate to say it cannot record.

Mr. FERRIS. Well, prospectively, it will not be able to record anything but the Grateful Dead.

Senator KERRY. What the perspective means—well, it is not necessarily all but the Grateful Dead.

Mr. FERRIS. Or any others. But I do not think you can sell a machine—

Senator KERRY. But that is not a restraint in trade, is what I am getting at. That is not a restriction that we should be frightened of in this country.

If they put the encoder in, all they are doing is adhering to a standard that we, the Congress, decide to undertake in order to protect people in this country in their rights as to their intellectual property.

Now a member of your coalition is the Electronic Industry Association. And I find it a little ironic, because they have worked long and hard to protect intellectual property.

I have been involved with some of them in Massachusetts. And we fought hard to ensure that software, computer software, and semiconductor chips get protection, and copyright does protect that kind of intellectual property.

Now why should not an artist and a musician be as protected in their software? Which is all we are protecting, is the software that goes into this machine. Why do they not deserve the same protection?

Mr. FERRIS. I think the copyright laws do give them protection. And the balance in those laws, Senator, I think is correct and is demonstrated by the tremendous viability in their industry.

I think there are other rights as well. I mean, how about the rights of the individual to be able to tape at home the particular selection that they bought?

Senator KERRY. They can do that now.

Mr. FERRIS. Well, they would like maybe to have the opportunity to do it with this DAT machine as well. Why should the Congress intervene and prevent the American consumer from exercising the option of buying one of these machines for \$1300 and using it as they have done every other recording machine?

Why is it that the Consumers Union and the Consumer Federation of America are opposing this legislation? Because they think that the American consumer should have the option to make this particular judgment, to be able to make a marketplace judgment as to whether or not this machine is going to create value for them in providing them with the opportunity to enjoy its uses.

It is no different from analog recording equipment in that context. This is all part of home taping, and home taping has become very much a part of the dynamic in the music industry. Home taping stimulates the sales of prerecorded music, and brings record profits to the recording industry and their participants, and provides as well tremendous enjoyment to the American public.

And I think the government stepping in and taking away from the consumer the right to purchase one of these machines, which they are going to do if they require a chip——

Senator KERRY. Let us talk realistically about that consumer. I mean, what are you really talking about? I mean, the average person who is building up a significant compact disk collection probably has opted for a compact disk portable or has one in their car.

And you may be talking about the person who has a Walkman or something who goes skiing, who wants a tape. But you know, there are plenty of ways to satisfy those needs.

What you are really talking about here is the perfect clone capacity, supposedly. And how many average consumers get into that kind of taping situation? I mean, what you are really talking about here are the college dorms and the other situations where you may have that mass ability to produce something that costs \$15.99 today and bring it down to four dollars, the cost of the tape or whatever, and broadly disseminate it.

Can you tell me the other uses?

Mr. FERRIS. Well, the uses are——

Senator KERRY. What is the consumer use you are talking about?

Mr. FERRIS. When the consumer goes out and buys that prerecorded piece of music, just how many purchasers buy it or would not have purchased it if they did not have the right to make a tape to put in their car or in their Walkman.

If you did not have the right to tape, there would be a significant depression of existing sales. There is a stimulative effect by the fact of having available the capacity to be able to "place-shift" your music, to be able to enjoy it where you wish to enjoy it.

And I think that is why the Consumers Union and Consumer Federation of America is against this legislation, because it deprives the American public of that option. The home taping phenomenon has become very much a part of the entire music purchase-enjoyment dynamic, which, I think, Senator, has elevated the recording industry to the record profits that they have now.

It is because of home taping, the portability that came with the Walkman, and high fidelity stereo in the car, and the boom box at the turn of this decade that stimulated the great sales and the uses of music and the enjoyment of music.

And I think that is what has brought the recording industry back. And what you are going to, if you pass this legislation, is to permit the recording industry to shoot itself in the foot. The DAT will turn into another great revenue stream for the recording industry, as the compact disk has, as the VCR was to the motion picture industry.

Why do they want to oppose it? They have historically opposed every piece of new technology, and that is understandable, because any change in the status quo is uncomfortable.

But I do not think the Congress should step in for the first time and ban a technology when it has nothing to do with the health and safety of the American public.

Senator KERRY. Well, I have gone on longer than I wanted to and meant to. And I want to ask Mr. Berman to respond to that, and then I will end.

But before I do, I do not think we are banning a technology. I think the technology is perfectly legitimate. The technology will be welcomed. The technology can sell. We are trying to protect a certain and restrict a certain kind of use of that technology.

That is all that is being talked about here, not the technology itself. It is the Japanese who are trying to bully us and are saying: Hey, if you guys put any restriction we are not going to sell it. But we are not saying that.

We are simply saying there is a particular kind of use which we are concerned about and we want to protect a certain kind of intellectual property. Sell it, but sell it with the understanding that that is the way it ought to be sold, and that is a very different thing from banning a technology.

And let me just ask Mr. Berman, then I will not ask any more questions, Mr. Chairman.

Mr. BERMAN. Senator Kerry, the question which Charlie turned on its head really should be whether in fact the ability to home tape results in a lost sale because it is cheaper to tape than it is to buy.

Now, it is true that not every taper in effect would end up being a purchaser. But in a significant number of cases, they would be. And it is precisely for the reason that Charlie himself has said so. It is a music consumer we are talking about and a consumer who has the wherewithal to spend \$1,300 for one of these machines.

So in fact, I think the incentive in terms of lost sale is there. It exists. That is the question, the extent to which the opportunity and ability to home tape affects the possibility of a sale. And it is because of the very person he is talking about that I think that possibility and that potential does in fact exist.

If all we were talking about is the notion—and I do not know why Charlie should worry; if most of the taping that goes on is not for music, it would be unaffected by what we are talking about.

And beyond that, all music in existence would be copyable. And beyond that, a number of record companies have said that they would be willing to issue copyable versions of their product.

This is not an attempt to stop a technology. I want to go back to the point that not all technology is benign; it has consequences. And what we are trying to do is achieve a balance between the right of the copyright owner and the hardware manufacturer.

You know, we tried for five years to talk to the hardware manufacturers. The former President of the Recording Industry Association of America went to Japan twice. No one was available to talk to him. No one at the hardware manufacturers and no one at MITI would talk about the consequences of technology on the recorded music industry.

It was only when a bill was introduced in the last session of the 99th Congress imposing a very prohibitive tariff on the importation of DAT recorders and when the USTR suggested to their counterparts at MITI that this was something to be talked about that we were able to get to a meeting. It took place in Vancouver at the end of last year, at which representatives of the world music community, including Japanese record companies, who are vitally concerned about the introduction of this machine, met with the hardware manufacturers.

And at that meeting we asked the manufacturers if we could demonstrate our system to them, and the answer was no.

Senator KERRY. Thank you, Mr. Chairman.

Senator INOUE. Thank you.

Mr. Ferris, some time soon as chairman of this subcommittee I suppose I will have to decide whether this measure goes beyond the hearing stage. I have not made up my mind, so your assistance will be most helpful.

Mr. FERRIS. I am readily available, Mr. Chairman.

Senator INOUE. I should point out to you that I am a life member of the musicians union. I have never recorded a piece, but I happen to be—

Mr. BERMAN. I think we can fix that, Mr. Chairman.

Senator INOUE. I happen to believe that we do have certain intellectual properties.

Now, correct me if I am wrong. Your position is that it would be absolutely legal and proper for me to purchase that equipment, buy the tapes, and make as many copies as I wished, as long as I do not profit from that?

Mr. FERRIS. That is correct.

Senator INOUE. In other words, I could purchase a recording made by Peter, Paul and Mary, a famous recording group, and I decide to give my very dear friends, 100 of them, Christmas gifts. And so I make 100 copies and I pass them out. That is okay?

Mr. FERRIS. I would say yes, that is all right under the present copyright laws, Mr. Chairman, as long as you were making those copies and giving them as gifts to your friends and the transfer had no commercial barter overtones or anything of that nature.

If you were in business and giving it to business associates, I think you would cross the barrier for that being a commercial transaction.

Senator INOUE. One could argue that I may have profited because I did not have to go out and buy the tape. But I did not do that. But it is okay as far as you are concerned?

Mr. FERRIS. As far as the present state of the copyright law is, that is correct. I believe that is correct, Mr. Chairman.

Senator INOUE. Twelve years ago, when my son was still ten years old at that time, he, after weeks of cajoling me, convinced me that I should take him to a rock concert. Obviously, he could not attend a Capital Center performance at night by himself. That is against the law, and so big daddy took his little boy to this rock concert.

And he took along his tape recorder, a little thing that the reproduction would be fuzzy at best. But he wanted to record some of the songs that were going to be performed that evening.

And so here I am with this little tyke getting up to the Capital Center, and he is not hiding the tape recorder. He has got it hung around his neck. The ticket collector stops us and says: Sir, you cannot take that tape recorder in there.

And I said: Why? And he says: You cannot record the performance. That is not possible, he says.

Well, I am not a constitutional lawyer and I was not about to argue, so I told my son, I will get you a regular tape. But I had to rush back to the parking lot and lock it away.

I checked later on with constitutional lawyers and they told me that that was proper and legal, that they could stop me, that they could prevent me from recording the property.

What is the difference between stopping someone from recording on that machine?

Mr. FERRIS. Well, I think when you buy a prerecorded—

Senator INOUE. My son bought the performance also. I bought the performance. We went to the Capital Center. We paid good money.

Mr. FERRIS. I am sure it would be determined by the implied contract in purchasing the admission ticket. They impose conditions and one of the conditions would be that the performance will not be recorded. And it can be policed as a contract matter, Mr. Chairman.

And when you buy a piece of pre-recorded music, there is a copyright payment that is part of that purchase price, that goes through the trickie-down process to the performers and the recording industry, and with that purchase you gain rights for that piece of recorded music, too.

And one of the rights that you gain under our copyright law is that you have the right to make a copy for noncommercial private use. Those are rights you get when you purchase that property, which is your property.

Senator INOUE. When I purchased that right to listen to the music at Capital Center, you said that very likely the performing group had an agreement that they would perform provided you cannot record it.

What if Peter, Paul and Mary made that agreement with the recording industry: We will perform provided no one records this. Is that legal?

Mr. FERRIS. I think that would be, sure.

Senator INOUE. That is within the copyright laws?

Mr. FERRIS. Well, it is a matter of enforcement. If the recording industry came up with a technical technique that—

Senator INOUE. But as far as the law is concerned, Peter, Paul and Mary can, according to your interpretation, say that no one may record our music?

Mr. FERRIS. Absolutely, I would think they could say that. The directive would be, you can only put this on a medium that cannot be recorded. But if you put it in a medium that can be recorded that is going to be sold, the person that buys that copyrighted copy of prerecorded music, gains rights.

But if they can develop a medium which has the ability contained within itself not to record, and purchasers and consumers choose to buy that product that has built into the software itself, the inability to be recorded, and they make that choice, I think that is perfectly valid.

Senator INOUE. But you say that even the purchase of this copyrighted property may be conditioned just as much as my son could not record the performance?

Mr. FERRIS. But the condition would really be from the performer to the recording companies: I am going to let you record my music, but you cannot distribute that unless—

Senator INOUE. What about if I say I am going to let you record my music, I am going to let you sell my music, provided my music is never duplicated?

Mr. FERRIS. I think they could make that judgment. They certainly will not be able to use the traditional medium. They will not be able to use compact disks, they will not be able to use vinyl disks, they will not be able to use any form of traditional—

Senator INOUE. Why not?

Mr. FERRIS. Because each of those media presently provides the capacity to record in them. Now, if there was something built into the recording, Mr. Chairman, into the recording itself, that self-destructed well, that would be something that the consumer would have the option to buy or not to buy.

Senator INOUE. That is legal?

Mr. FERRIS. I am sure that would be legal.

Senator INOUE. Why is it not legal to put something in that gadget there—I am not an electronics expert—that would prevent that?

Mr. FERRIS. Well, what you would be mandating is a change in the circuitry of this particular DAT recorder not in the recording—so that the DAT recorder could no longer record, it would shut off as a recorder.

So the problem Mr. Chairman, is if you legislate a circuit in the DAT recorder that prevents it from recording, how can you sell it as a recorder? It is not. It is no longer a recorder.

Senator INOUE. In other words, I should have stood up for my son's right that evening and insisted that his constitutional right permitted him to record that?

Mr. FERRIS. You made the judgment, explicitly or implicitly, that evening, Mr. Chairman, that those terms and conditions were acceptable or not. You could have said, I will not pay my money for that concert if I cannot bring my recorder in there. And that would be the same judgment that a consumer would be permitted to make if the software itself had all of the self-contained limitations that any particular recording company wanted.

But when you attempt to change the circuitry in the DAT recorder, so that that the DAT is no longer good for the reason people want to purchase them, I fear they would not purchase them. You did not walk away that evening but your recorder still worked.

Senator INOUE. Then according to your argument, as a consumer now it is up to me whether I want to purchase that with or without this gadget, is that not right?

Mr. FERRIS. That is correct. But if it had that mandated chip, I am just saying that they would not be available, Mr. Chairman---

Senator INOUE. So as a consumer, I am not being denied any of my constitutional rights.

Mr. FERRIS. If this legislation that has been proposed, Mr. Chairman, were enacted, these DAT machines would not be imported into this country and sold.

Mr. BERMAN. That is not a constitutional question. That is not a legal question. It is a commercial question.

Mr. FERRIS. Absolutely, Mr. Berman, it is a commercial question. What you are attempting to do is interfere with the operation of the free market. You are seeking a legislative mandate to change the circuitry in this DAT recorder so that it has no commercial viability and therefore would not come into this country.

So this legislation in effect, Mr. Chairman, would ban the digital audio tape from the American consumer.

Senator INOUE. Jay, what do you have to say about that?

Mr. BERMAN. I searched the law and I find that Charlie has created a right where none exists. I go back to this notion that he has a right to home tape. The law is silent on that, and in fact that is why we are here.

The only conceivable avenue for someone to make the 50 tapes or the 100 tapes or whatever it would be—would fall within the notion of fair use. That is a very debatable question, Mr. Chairman. 50, is that fair use? 100, is that fair use?

It is precisely because this is such an unresolved area that we come here seeking a temporary solution, in the hopes that the underlying issue can be addressed. That is what this is all about, because if this machine were to come here, and it is only a copying machine, but if it were to come here and people were to copy, why, the law would never have a chance to accommodate our right.

That is a straightforward political analysis. It does not take a genius to figure that out.

And so I cannot find in the law the right that Charlie claims. I do not see it having the same consequences. This machine, which is a very expensive machine, could copy every piece of music in existence today. It could copy, and the record companies would have the right to issue versions of its music that were not encoded, and some might and some might not.

So I do not find the serious dilemma. I find it would be a commercial decision if the Japanese manufacturer decided not to sell this machine, and I do not believe for a moment that he would decide that, for this reason. We are talking about people who are mercantilists. They live to export to the United States. They need to be in the pocket of the American consumer, and they cannot make money any more selling VCR's and compact disk players because there are no profit margins in it.

So it is this machine today and it will be another machine tomorrow. I do not doubt for a moment that the machine will come here.

Senator INOUE. Well, both of you have earned your fees this morning. You have done very well. But I am still a bit confused.

Senator EXON.

Senator EXON. Mr. Chairman, if I might ask a question or two. In the first place, I was listening with great interest to the chairman's line of questioning, and I have never sought to get any copies of any of the music that our chairman has brought forth on the public. But I have been very much disappointed that I have not been able to get a recording of your speeches, Mr. Chairman.

Senator INOUE. That is not intellectual property.

Senator EXON. I simply say to you that I, like the Chairman, have not made up my mind on whether this legislation is proper or not.

The last time that I was in this room, basically at the suggestion of my friend, the junior Senator from Tennessee, we had a collection of rock music people in the room. And one of the things that I said got me to the place where I became famous for the first time as a defender of rock music. And that was by error and not by design.

I am a great lover of music and I listen to music whenever I have time. I am very much interested in property rights, the intellectual rights of individuals. And I think that we do have a responsibility to look at that, to make sure that we have those things come along.

At the same time, I sometimes wonder, and that is why I am looking at this piece of legislation, as a member of this subcommittee and a member of the Commerce Committee to see whether I think it is necessary or not.

Let me ask this general question. The forerunner to this machine, I suspect, was Thomas Edison's phonograph. Everything that has come down since that time goes back to that means of copying or duplicating something.

Have not the fears that have been expressed here, and many of them legitimate, I say, have they not been expressed on every kind of a duplicating or copying mechanism that has followed since the days of scratchy Thomas Edison phonographs?

Mr. FERRIS. Absolutely.

Senator EXON. How is the matter that we face today and how is the concerns attempted to be addressed by the legislation that we are discussing significantly different from that age-old argument that goes on and on and on and on?

Mr. FERRIS. None whatsoever, Senator Exon. The anxieties that are being expressed here today against this new technology I am sure were duplicated from the time of Edison.

And each new technology that comes onstream, whether it be the sound movie, whether it be television, whether it be cable, whether it be the Walkman, whether it be the cassette form of music, the same type of anxiety has been expressed, that this new technology is going to destroy the economic viability of the present technology.

And those are real anxieties and I understand that. Transitions are always very hard, but every previous technology that has come onstream has turned out to expand the benefits of the performing artist. And I think this is nothing but the next generation of that technology, which too will turn out to be a tremendous benefit to the recording artist, as well it should.

But I think the anxiety is genuinely expressed and very real. But I do not think Congress ever before has intervened and banned a technology because of the anxieties that we have heard here expressed today.

And I certainly hope that Congress will not break that uniform precedent of not stepping in and banning a technology when it has nothing to do with the health and safety of the American public, when the consumers and their organizations are in favor of these new machines and their introduction and against the intervention by the Congress.

Senator EXON. Thank you, Mr. Ferris.

Mr. Berman, I assume you would not agree 100 percent?

Mr. BERMAN. Indeed I do not, Senator Exon. I think it is a very good question, and I think the difference represented by this machine is the fact that it is so good, because for the first time it produces a perfect copy. Historically, when people taped from current analog to another analog, you degrade the copy, and each subsequent copy got worse.

Here we have a machine that produces perfect copies endlessly. In that environment, there is no incentive to buy music. The incentive is to tape it, because it is cheaper to tape than it is to buy.

And that is the threat posed by this machine. And it is not that we are trying to ban this machine. What we are seeking is some accommodation between our ability to sell our product and the ability of the consumer to hear it in this particular format.

That is why this represents such a threat.

Senator EXON. So basically what you are saying is that it is pretty much back to my same question. It is an age-old argument, but this is new technology that you think causes much more of a concern than all of the previous, is that right?

Mr. BERMAN. Yes, sir.

Senator EXON. There are now laws that prevent me from using this or any other copying device. I would simply say to you, Mr. Berman, that to my uneducated ear I cannot really distinguish between first, second, third, and fourth generation copies.

Next Christmas, if I get a Christmas card from my distinguished colleague with a copy of a speech that he gave, I will not be able to tell by listening to it whether it is a second, third, fourth, or fifth generation copy.

Senator INOUE. I will send you only the first.

Senator EXON. I guess that is my concern. I am wondering if it were justified in going in. Is there anything we can do—is there anything we can do to satisfy your concerns, which I think there is

some basis of legitimate concern about, about tightening the laws that would prevent someone from—there are already laws that it would be illegal to make copies from that machine, is that right?

Mr. BERMAN. Well, the law is—we may well have a right under the law, but we have no remedy, Senator Exon. And so what we are seeking here is a way to in effect get a remedy by the cooperation between the software manufacturer and the hardware manufacturer.

The law is very unclear, and so we have no way of pursuing what the remedy might be. But you know, it is difficult for me to accept the notion that it is okay to make 50 copies or 100 copies and that falls within the concept of fair use.

I think it—

Senator EXON. Do you think five?

Mr. BERMAN. I do not know. I am asking the Judiciary Committee to make that determination. But I am saying, in the meantime let us hold up on this machine. I do not think that is an unreasonable request.

Mr. FERRIS. Senator Exon, on that point that Jay made, the fact that the law is unclear. I think it might be of more than just passing significance that the recording industry has never brought a lawsuit to clarify that law, to make a determination that home taping, even in the most egregious examples that have been hypothesized here today, is a violation of the copyright law.

The motion picture industry did bring such a lawsuit on the video side. The Recording Industry never did because I think the law is so much more clear from the standpoint of what rights were granted in the Sound Recording Rights Act of 1971, and with respect to the specific exemption for home taping for private users.

If they brought a lawsuit, if they had such confidence, we would not be here just talking about remedy, because I think the real question here is, is there a violation of the copyright law and is there real harm that comes from the home taping phenomenon.

We should not be just focusing on remedies. And Mr. Berman has been extraordinarily successful, and I admire him for it, in shifting the debate onto just what the remedy should be and not what the harm is from which you fashion a remedy. Unless you know what the harm is, how do you fashion a remedy.

Mr. BERMAN. Let me go back to this. The reason why a lawsuit would prove to no avail is for the very same reason that the Supreme Court and other courts in the video home taping case produced the result that said that this is a decision that the Congress should make.

And so in effect, we would end up being back here in the Congress. But let me say something about this notion that in 1971 the Congress gave Charlie the right to tape. And I want to read from "Nimmer on Copyright."

Mr. FERRIS. Senator Nimmer?

Mr. BERMAN. No, the Senate never acted on that, Charlie. You are talking about House report language.

The committee's statement that it is not the intention to restrain home recording, if read in context, reveals that the committee never intended to create a special exemption for audio home recording. The passage in which the home recording remark appears states:

"It is the intention of the committee that this limited copyright not grant any broader rights than are accorded to other copyright proprietors under the existing Title 17. Record producers and performers would be in no different position from that of the owners of copyright in recorded musical composition over the past 20 years."

This language emphasizes the point that the 1971 amendment extends to the owners of sound recording copyrights the same statutory protection already granted to the owners of musical composition. No one has claimed that the pre-1971 copyright statutes contained any provision other than the doctrine of fair use for exempting home recording from copyright infringement.

Since the House report states that the purpose of the amendment is to extend the same protection to sound recordings, it is clear that the amendment did not create a new exemption for home recording. The most one can fairly attribute to the House report—

And I emphasize, this is a House report; there was no concurrent Senate language, and when the Congress in 1976, five years later, revised the copyright law, it said nothing about this.

The most one can fairly attribute to the House report, then, is an opinion that home recording constitutes fair use.

Senator EXON. Mr. Chairman, I appreciate these lengthy answers and I can see that this is a very difficult problem that we are going to have to wrestle with, and I will be working with you on it.

And so I will be glad to close my questioning now with the notice to you, Mr. Chairman, that I cannot wait until Christmas. Thank you very much.

Senator INOUE. Ordinarily, as the presiding officer I would apply the time constraints on the witnesses and members of the panel. However, it is obvious that the decision, if ever made by this committee, will have to be based upon the legal and constitutional aspects involved. Therefore, I permitted this full and free debate.

We thank both of you for participating this morning and enlightening us. But as my friend from Nebraska says, whenever you have a bunch of lawyers—and I cannot say the rest of it here.

But I thank you very much, Charlie. I thank you very much, Jay. You have been very helpful.

Mr. FERRIS. Thank you, Mr. Chairman.

Mr. BERMAN. Thank you.

Senator INOUE. Now we come to the pleasant part. We are pleased to have with us a member of the great recording group Peter, Paul and Mary, Ms. Mary Travers from New York, and Mr. Alec Bernstein of Aesthetic Research of Baltimore, Maryland.

Ms. Travers.

STATEMENT OF MARY TRAVERS

Ms. TRAVERS. My name is Mary Travers and I come today representing the recording group Peter, Paul and Mary. I also am a songwriter, a member of the union AFTRA, and also a music publisher. So my vested interests is many.

I would like to thank Chairman Inouye and Chairman Hollings and the members of this committee for the opportunity to ask you, as representatives of my government, to protect me and my fellow artists, to protect our futures, by protecting what is rightfully ours, the royalties from our artistic efforts.

I must say, I have listened to the testimony today, and I do not mind being referred to as intellectual property so much, but I have

been called many things in Washington. This is the first time I have been referred to as software.

Although as I get older I do get softer.

At any rate, the life of a recording artist is for most short, the life of a record even more fleeting, and the chances of success in my business are very, very slim. For the songwriter or singer, even one or two successful records can make a major difference in their income, and sometimes in their income for many, many years.

Home taping reduces our royalties. There is no question about that. And digital audio tape is about to take it the next frightening step further.

In the early years of the recording industry, artists were paid a few dollars or sometimes just a couple of bottles of whiskey, and the fruits of their talents were collected by others. Many of those artists died impoverished, and copyright laws now serve to prevent that loss of control over an artist's original work.

Today's record companies spend enormous sums in recording and marketing in hopes that the artists that they have developed will communicate their unique artistry successfully.

And not only the artist hopes that the record will be successful. Everyone who participates in the making of a record depends on its sale—the songwriter or the composer, the music publisher, the sound engineer, the band members the producer, the marketers, the graphic artists, the plant operator, the truck driver, the retailer, and on and on. Many people's jobs are at stake in the investment both the record company and the artist together have made in the production and hoped-for sale of each reproduction of the artist's work.

Now, many things have changed since the industry's beginning, when the records were engraved on cylinders, to today when the process of recording is a million times more complicated and expensive.

But one thing has not changed, the artist. We are, as we were in the beginning, individual unique talents, making our living by creating music and words that move and touch, hopefully, other people's lives. And these creations are our labor, they are our property.

They are assets as real as any other, and they are hard assets. I can go to the bank and borrow against these assets, and I have.

The costs of creating and recording has risen enormously in the last 25 years, since I began. If the recording companies' ability to recoup its costs are damaged by the copying of its product by others, the recording industry as a whole will be less able to invest in new artists.

But in the end, it is the individual artist that is hurt most of all. The legitimate income from his or her copyrighted work will be greatly diminished, and the economic base that should have sustained the artist in order to be able to continue to create new work is destroyed.

Unfortunately, the ability to copy and reproduce music without regard to those who own the creation has already proliferated alarmingly. What does a copyright mean if the absence of law makes it unenforceable?

The history of the industrial revolution in our nation is that as new products and new technologies are invented, opportunities for jobs and quality of life have improved. The labor movement has included men, women and children who have fought for their rights as individuals for decent working conditions and fair pay.

And this is as true for artists and musicians as for textile workers. Technology has changed how artists create, but not our need to protect our work. To allow technology to leave the artist's labor and property unprotected is to deny the most basic of all laws, that men and women are entitled to the fruit of their labors. New technology should encourage ideas, not inhibit them.

Regardless of the revolutions in recording technology yet to come—and there will be—there has to be strong legal recognition of the right and the responsibility of the law to protect the labor of the artist and creator to what is, after all, his or her property.

Home taping has been made possible by technology, but the fact that it is possible is no excuse to let it continue to exist unchecked. The argument that the electronics and tape equipment manufacturers make, that they are not responsible for what others do with their product, is quite frankly, I think, immoral.

Everyone knows full well what the majority of their sales are used for—to copy the copyrighted work of others. And if it were not the case, there would be no lobbying against the legislation which would make this situation more equitable.

We in the music business look forward to new technologies which enhance our music. But we do fear the future of an industry that is vulnerable to the whims of foreign manufacturers.

We are afraid that digital audio tape recorders will make the taping problem worse. We are concerned that they do not offer us the chance to sell our music. Rather, they are only good for taping our music without paying for it. We need you to intervene.

The bill under consideration today will be a welcome recognition that technology has not outstripped the law, that we can as a society confine technology within the human ethic represented by law.

I thank you.

Senator INOUE. Thank you very much.

Mr. Bernstein.

STATEMENT OF ALEC BERNSTEIN, AESTHETIC RESEARCH COMPANY

Mr. BERNSTEIN. My name is Alec Bernstein. I am testifying today to express my concern that composers, musicians, and lovers of classical music will not be able to use this new DAT system.

My qualifications for this testimony are as follows. I have extensive backgrounds in both music and digital electronics. I have a degree from the Peabody Conservatory of the Johns Hopkins University in Musical Composition. My music has been performed extensively throughout both the United States and in Europe.

For over ten years, I have been working in the digital audio field. For the last five years, I have managed the Aesthetic Research Company, which I founded with my partner Dan Carney in 1982. My primary responsibility there is designing digital electronic musical instruments exclusively for composers and other musicians.

As an artist, I am here to tell you that I see that the DAT is a tremendous opportunity for artists, not a threat. The only threat I see is the legislation being discussed here today. It is a threat for two reasons.

First, it would effectively ban the next generation of audio technology by making it very undesirable to potential purchasers. Second, the proposed CBS copy-code system will destroy the artist's creative work by cutting out a notch of music in an audible range.

The great advances in electronics in the last few decades have led to the enormous enhancement of personal musical electronic equipment. The DAT, if it is allowed into the consumer market in the United States, will be another very serious improvement in this field.

The proposed restrictions on the device, specifically the CBS anti-taping chip, seem to be an attempt to keep the DAT out of the U.S. market. The technical limitations of the frequency manipulation by the CBS chip make the device essentially unusable for any serious audio use. No one interested in quality recording will ever use a recorder with this chip in it.

My rights as a consumer and as a working musician will be denied if the proposed restrictions keep an important new machine out of the market. I strongly urge you to examine these proposals in order to safeguard the original goals of copyright protection without denying so much to the public at large.

Killing DAT will mean the loss of a new format for enjoying music and will deny all artists a new market for their music. The area of music in which I create will be particularly devastated by the denial of this technology. Like many other composers, I use audio tape recorders extensively in my work.

I use both standard cassette and multi-track cassette equipment. The multi-track equipment allows me to record different instruments or different musical materials from the same instrument on the same tape. In this way, all the parts can be listened to separately, together, or in any combination.

A DAT, if the digital formats are available for digital mixing and editing, would give essentially unlimited mixing and editing capabilities. In analog multi-channel recording, each transfer from track to track results in a generational loss of quality. The digital process possible with this machine would have basically no quality loss within my creative process.

The advent of the DAT in this country would fulfill the needs of the artistic populations who record their own music, just as the CD's satisfied those who were only interested in playing prerecorded music.

Most composers obtain performances by the exposure and dissemination of their music via audio tapes. The process of making and distributing these tapes must be at least equal to the quality that the consumer market has. However, as the consumer market advances into digital technology the musician remains a generation behind in analog tape.

The DAT, on the other hand, will make individual artistic recordings finally affordable. I have found in my own career, which is not backed by a record company or media in general, as most

classical contemporary composers are not, that home taping has actually been very beneficial to us as a group.

All of our concerts attendances are basically made by distribution of audio cassettes to the general public, many of which are copied. Whenever I perform in a place that we have not been before, a lot of people who have heard of me come and ask to buy all the other cassettes that are available of my music.

I do not know how they get these. We have no international distribution network. But it has happened all over whenever I have performed. They are also interested in coming to whatever concerts we are at, and it has been very beneficial for all of us.

There are several problems with the proposed CBS anti-taping chip technology. In any serious classical music recording, the loss of frequency in the notch will destroy the music written in the upper registers of classical instrumentation and orchestration. Actual notes written by composers, which are heard in every performance, live or recorded, will disappear.

Good classical performers spend their lives perfecting their technique and making every note heard. The complete disrespect for our finest orchestras and soloists by this anti-taping chip is simply not acceptable.

The missing notch frequency will also create major problems when using the device for recording non-copyrighted material. In a recording session, certain passages of music will create sound around the notch frequency, but not in it. This will be perceived by the chip as a record inhibit and it will stop recording.

The proposed restrictions will also eliminate the use of the DAT as a mass storage device for home computers. This use infringes on no one's copyright protection and I see no reason to withhold this technology from this additional market.

Again, I urge you to review the methods now proposed to protect the DAT system. The question is not one of copyright infringement; the question is whether these valuable technological advances will be banned from the American people who could most use them.

Thank you for your considerations to these views.

[The statement follows:]

STATEMENT OF ALEC BERNSTEIN

Good morning. My name is Alec Bernstein, and I am testifying today to express my concern that composers, musicians, and lovers of classical music will not be able to use the new DAT system. My qualifications for this testimony are the following: I have extensive backgrounds in both music and digital electronics. I have a degree from the Peabody Conservatory of The Johns Hopkins University in musical composition. My music has been performed extensively throughout both the United States and Europe. For over ten years, I have been working in the digital audio field. For the last five years, I have managed the Aesthetic Research Company, which I founded in 1982; my primary responsibility there now is to design digital music equipment exclusively for composers and musicians.

As an artist, I'm here to tell you that DAT is a tremendous opportunity for artists, not a threat. The only threat I see is this legislation being discussed today. It's a threat for two reasons. First, it would effectively ban the next generation of audio technology by making it undesirable to potential purchasers. Second, the proposed CBS copycode system will destroy the artists' creative works by cutting out a notch of music in an audible range.

The great advances in electronics in the last few decades have led to the enormous enhancement of personal musical electronic equipment. The DAT, if it is allowed into the consumer market in the United States, would be another serious im-

provement in this field. The proposed restrictions on the device, specifically, the CBS anti-taping chip, seem to be an attempt to keep the DAT out of the U.S. market. The technical limitations of the frequency manipulation by the CBS chip make the device essentially unusable for any serious audio use. No one interested in quality recording will ever use a recorder with this chip in it. My rights as a consumer and as a working musician will, therefore, be denied, if the proposed restrictions keep an important new machine out of the consumer market. I strongly urge you to examine these proposals in order to safeguard the original goals of copyright protection, without denying so much to the public at large.

As a musician, and particularly as a composer, I have several serious objections to the proposed restrictions on the new form of audio technology—the Digital Audit Tape Recorder. These proposed restrictions would significantly inhibit, if not totally disallow, me from using an important, innovative technology in my field. None of my own uses of such a device would in any way infringe the copyright laws as they now stand. As a composer, I certainly advocate copyright protection, but I believe the copyright laws already offer adequate protection. In any case, this proposed method of protection is particularly objectionable. It seems quite clear that these restrictions are an attempt to essentially ban the device from the market.

As a general matter, killing DAT will mean the loss of new format for enjoying music and will deny all artists a new market for their music. More specifically, the area of music in which I create will be particularly devastated by the denial of DATs.

Like many other composers, I use audio tape recorders extensively in my work. I use both standard cassette and multitrack cassette recording equipment. The multitrack equipment allows me to record different instruments or different musical materials on the same instruments one at a time on the same tape. In this way, all the parts can be listened to separately, all together, or in any combination. Affordable home-use multitrack recorders have four to eight channels available with reasonable recording quality. A DAT, if the digital formats are available for digital mixing and editing, would give essentially unlimited mixing and editing capabilities. In analogue audio multichannel recording, each transfer from track to track results in a generational loss of quality. The digital process, possible with the DAT, would have basically no quality loss whatsoever.

If the DAT becomes available in the suggested price range, major improvements in the quality of home recording of any composer or musician's music will occur. The exceptional quality and flexibility of these machines makes them highly desirable for this purpose. Also, once the music is stored as number sequences, many kinds of manipulations, such as digital filtering of noise and timbres, become easily accessible. These manipulations are normally a difficult and awkward process on home analogue recorders.

Many working musicians who use audio tape recorders as any artistic and compositional tool believe, as I do, that we have been discriminated against by the new advances in digital audio. This has been particularly true with the introduction of CDs in the last few years. CDs are playback-only devices. The exceptional recording quality that is possible when recording music on CD is not available for the individual's compositional use.

The advent of the DAT in this country, though, would fulfill the needs of the artistic populations who record their own music—just as the CD satisfied those whose only interest has been playing prerecorded music. Most of the music written in this country is recorded on home recording equipment. It is ironic and unjust that musicians, of all people, would be denied access to the major improvements that are available to the average consumer. And it is out of the question for a serious composer to spend money on high quality digital audio equipment which cannot be used for composing and arranging one's own music.

Most composers obtain performance contracts and career advancements by the exposure and dissemination of their music via audio tapes. The process of making and distributing these demonstration tapes must be at least comparable to the standard of quality that the consumer market enjoys; however, as the consumer market advances into the high level of quality offered in digital technology, the musician will remain a generation behind in analogue tape. The DAT, on the other hand, will make individual artistic recordings finally affordable.

Another serious problem that follows the CD format is the inability of small and independent companies to make recordings of music which do not have a high profit margin. Much of the standard twentieth century classical music repertoire is not available on CD. Because of a scarcity of pressing facilities, it is prohibitively expensive for small record companies to produce the music of living composers on CDs. Only large commercial music is being produced. Since DATs are much more easily

produced, the introduction of them will certainly bring the high quality of CDs to contemporary classical music.

There are several serious problems with the proposed CBS anti-taping chip technology:

1. In any serious classical music recording, the loss of frequency in the "notch," which is eliminated by the chip, will destroy the music written in the upper registers of classical instrumentation and orchestration. Actual notes, written by the composer, which are heard in every performance, live or recorded, will disappear. Good classical performers spend their lives perfecting their technique and making every note heard. The complete disrespect for our finest orchestras and soloists in the great tradition of western classical music by this anti-taping chip is simply not acceptable. The fact that some popular music recordings will be minimally affected by this process is not a sufficient reason to degrade so much of our cultural heritage. No classical music lover will ever purchase or use a machine that eliminates a multitude of notes in the climax of Beethoven's ninth symphony. It has been clearly shown that copyright protection can be easily accomplished without the disruption of music in the audio range. An encoding system to prohibit the reproduction of perfect clones has already been accepted by the manufacturers of the DAT, which does not alter the music. Should it be possible to protect videotapes shown on television by cutting a "notch" out of the color spectrum to inhibit the illegal use of the home VCR? Would the public accept viewing videotapes without green, so that the VCR would be unable to record copyrighted films? The CBS proposal is an equivalently absurd proposal.

2. The missing "notch" frequency will also create major problems in using the device for recording noncopyrighted material. Often in a recording session, certain passages of music will create sound around the "notch" frequency but not in it. This will be perceived by the chip as a record inhibit and will then stop the recording. There will also be many times when notes sound below the "notch." Their overtones and combined tones will trigger the same cessation of the recordings. This means that the CBS system will prevent written music from being recorded, even though no copyright infringement has occurred. No one can predict when these disruptions will happen. This is a totally unworkable situation. As a result, no working musician will purchase or use a machine with such limitations.

3. The proposed restrictions would also eliminate the use of the DAT as a mass storage device for home computers. In my music, I use computers as well as acoustic instruments to generate sound. The DAT would be a very reliable and inexpensive data storage system for computer users like myself. This use infringes on no one's copyright protection. There is no reason to withhold this technology from this additional market.

Again, I urge you to review the methods now proposed to protect the DAT system. The question is not one of copyright infringement; rather, the question is whether these valuable technological advances will be banned from the American people who could most use them.

Thank you for your attention to this statement.

Senator INOUE. What sort of music do you compose?

Mr. BERNSTEIN. Contemporary classical is a reasonable definition, I guess.

Senator INOUE. And you play your music on this equipment?

Mr. BERNSTEIN. No, I do not. But I work with tape recorders in composing, by using multiple tape recorders to work with several instruments myself within a general studio use.

Senator INOUE. Do you believe that your effort is a property right?

Mr. BERNSTEIN. My compositional work?

Senator INOUE. Yes.

Mr. BERNSTEIN. Yes, I do.

Senator INOUE. Do you believe it should be protected?

Mr. BERNSTEIN. Yes, I do. And I believe it in general has been protected by the present copyright laws, and that the amount of home taping or people copying my work without my permission has personally benefited me and a lot of composers extensively.

I have had apologies given to me after concerts from people that they have illegally—and that is a word that I have heard before—copied my music from cassette tapes, and when there was no other route available, and they come and they buy the other cassette copies that are available at the concert or at certain distribution networks. They come and tell everyone else they know.

It has been very helpful, and I have found that the number of people who would purchase a record of an unknown composer is very small. There are thousands of modern composers who no one knows of, and recordings are expensive. A lot of things are expensive.

People need to hear my music first, get used to the new ideas, and then are in my regular audience after that point.

Senator INOUE. The case I cited was not hypothetical. I did not want to mention the person's name because he was a former colleague of mine in the United States Senate, who made 100 tape recordings of a famous speech. And he took it off another tape, and he passed it around to his colleagues.

Now, would you object if I made 100 tape recordings of your composition and passed it out among my colleagues in the United States Senate as a gift?

Mr. BERNSTEIN. The first thing I am thinking of is the fact that I give out between 500 and 1,000 audio tapes of my music every year.

Senator INOUE. That is part of your business, is it not?

Mr. BERNSTEIN. That is part of my business.

Senator INOUE. That is part of publicity.

Mr. BERNSTEIN. And arranging performances and disseminating contemporary music, not just my own music but also the music of other composers who I work with in exchange systems. I often do get recordings from young composers in Europe, asking me to distribute them in that same way to people who would be interested and would enjoy it.

Senator INOUE. That is part of free enterprise. But if I purchase one of your tapes and make 99 copies and pass it out, you will not object to that?

Mr. BERNSTEIN. Not under the copyright laws as I have been led to understand them and the way I feel about them, which is a limited copyright protection, not an exclusive copyright protection.

I may not like, and it certainly does not feel good, to have my music copied that way, but the benefits available by limited copyright protection for the dissemination of information in general has benefited me immensely as an individual and as a musician.

I am not a person that could define the number of copies that differentiates the dissemination of information and copyright infringement. The legal activity is beyond me. But I think it has been very beneficial to have non-commercial home copying in certain forms available in this country.

I use it a lot. I use Xerox machines a lot, I believe within the law for educational purposes, studying scores. I buy a score, I Xerox it.

Ms. TRAVERS. That is against the law. That is a violation of copyright law.

Mr. BERNSTEIN. To Xerox a score?

Ms. TRAVERS. To Xerox a score.

Mr. BERNSTEIN. To study?

Ms. TRAVERS. To Xerox a score. I am sorry.

Senator INOUE. You had better watch it. You may go to prison.

Ms. TRAVERS, if I made 99 copies of a recording—

Ms. TRAVERS. I would be mad as hell, I would. And so would a lot of other people. The producer of my record, who is paid on points of sales, would be upset. The publishing company of maybe ten different writers would be upset. Ten lyricists, ten musicians who had created the music, because very often a song has a lyricist and someone who writes the music.

They are all entitled to every sale or part of that sale. It is not just my copyright as a performer I am trying to protect. What I am protecting also and concerned about, those people who earn their living, not standing on a stage singing, but who earn their living writing. And when they sell a song to an artist who is able to sell records, it is very important to them.

When you go to a record company, and if you are lucky enough to have them—and I have produced albums on my own, without the ability of having the big distribution that a record company has. The record company takes an artist when they think they might be able to make their costs back, and their costs are enormous.

And they do not sign artists who are in what I would call very artistic areas, but not areas where there is a mass appeal. Unfortunately for the world, classical music is not sold in the numbers that popular music is sold. And that means that it is harder for a classical artist to sell records.

But I believe that classical artists would do better if major record labels could afford to lose a little money on them. But if major record labels are being counterfeited by those at home, they will not be able to afford to carry an artist who deserves exposure, but who cannot pay his own way.

Senator INOUE. In determining the price of a recording to the consumer, let us say \$15, in the determination of that I presume there are all different costs: a certain percentage for the performing artist, for the lyricist, the composer, the recording company.

Ms. TRAVERS. The graphic artists.

Senator INOUE. What have you.

Is there also a special markup to compensate for those who will be making the recordings off your recording?

Ms. TRAVERS. No.

Senator INOUE. So you are not getting anything out of someone who is recording your recording?

Ms. TRAVERS. No. I get their enjoyment and I am glad they had a good time, but I wish I had been there.

Senator INOUE. Well, I thank you very much. You have been very helpful.

Ms. TRAVERS. Thank you.

Mr. BERNSTEIN. Thank you, Mr. Chairman.

Senator INOUE. Our final panel consists of Mr. David Stebbings, CBS Record Technology of Milford, Connecticut; Mr. Leonard Feldman, Electronics Laboratories, of Great Neck, New York; and Mr. Fred Weingarten, Communication and Information Technologies, Office of Technology Assessment of Washington.

According to my witness list, Mr. Stebbings starts off.

STATEMENT OF DAVID STEBBINGS, DIRECTOR OF RECORDING RESEARCH, CBS RECORD TECHNOLOGY, ACCOMPANIED BY LAWRENCE GARDNER, SENIOR ENGINEER

Mr. STEBBINGS. Good morning, Mr. Chairman and members of the subcommittee, I am glad to be here.

I am David Stebbings, Director of Recording Research at the CBS Record Technology Center in Milford. And with me this morning is Lawrence Gardner, a senior engineer working on the project.

We welcome this opportunity to explain and demonstrate the CBS copy-code system in action. The copy-code system has two essential elements. The first is this electronic device—I hope you can see this, the encoder, which is used in the recording studio to remove from a master tape a very narrow sliver of sound or notch.

Listeners cannot distinguish a coded recording from a recording which is not coded. To demonstrate, let me play the same brief segment of a familiar Barbra Streisand song from the Broadway album, one from the compact disk or CD that has been coded through this device and one from a CD that has not been coded.

The lights you see on either side will indicate which of the two CD's you are listening to. And I invite you to try and identify which recording was coded.

[Recordings played.]

Even professional listeners, record producers, artists, and studio engineers have not been able to reliably detect which CD was coded and which was not.

Larry, which light indicated the copy-code CD?

Mr. GARDNER. The blue one.

Mr. STEBBINGS. I understand it was the blue one, Mr. Chairman, because I certainly could not tell from here.

The second element of the copy-code system is the copy code scanner. It is an integrated circuit or chip which could be like this, and it would be built into a DAT recorder. When someone attempts to tape a musical selection that has been coded, this chip scans the music looking for the notch.

And when it finds it, it would inhibit the recording for about 25 seconds. The cycle would then be repeated continuously. The chip will look again for the notch. If one was found, it would again interrupt the recording. So the final tape made by the taper of an "uncopyable" piece of music would thus consist of portions of music interrupted by periods of silence.

Over here I have a standard cassette recorder—I have not got access to DAT machines yet—which is equipped with a scanner of the type I have just described. It will allow normal taping of any album that is not protected by the copy code notch. The scanner will simply scan the music, determine there is no notch, and permit copying.

When the music has been coded, however, it will be detected and the recording will be interrupted. To demonstrate, we would insert a new cassette into this recorder and attempt to copy the coded CD that you were just listening to.

Larry here is pretending to be, if you will, the home taper. You will be listening while we are taping to the coded CD source, and

then after we have attempted to make the recording we will roll the tape back and show you what happens.

We have tried to make this recording on a new cassette tape, and Larry is now winding the recorder back and let us listen to the result off this tape.

[Recording played.]

Mr. Chairman, you may notice that, unfortunately, the music has been interrupted. This is the heart of what the CBS copy-code system is all about.

Representatives of the Japanese electronics industry have been attempting to show that the CBS copy-code system notch would have an unacceptable effect on sound quality. Since the hardware manufacturers have never been given any of the units we have built at CBS, it is apparent that they were demonstrating a system that they themselves had built, and not the CBS copy-code system.

Moreover, the Japanese engineers made some errors in encoding the demonstration tape which could easily have been avoided with CBS technology.

Unfortunately, the partisan nature of this issue has generated some biased and inaccurate reportage about the copy code's effect on audio quality. To comply with the recommendation made by Chairman DeConcini and Chairman Kastenmeier and in the hope of moving beyond this distracting area of the controversy, we intend to arrange to submit the copy-code system for testing by the National Bureau of Standards. We only ask that they perform their tests in a timely manner so as to not impede the progress of this legislation.

Finally, I would like to comment on the assertions of the representatives of the hardware manufacturers and MITI that their own technological solutions will prevent digital to digital copying. First, there may now be a difference in frequency sampling rates between CD players and DAT machines, but what is to assure that that difference would exist next week? Both Sharp and Hitachi have already shown machines without the differential as prototypes, and converter boxes can easily harmonize the frequency sampling rates.

Second, the hardware manufacturers claim that digital flag codes will make digital to digital copying impossible, but the code is easily defeated in a number of ways. These are explained more fully in my written testimony.

Third and most importantly, the so-called protective alternatives do not address the problem of digital-analog-digital copying at all. All you need to do is to plug the CD player directly into the DAT with a standard stereo hookup cable, which costs about 75 cents.

In conclusion, Mr. Chairman, the CBS copy code scanner system works and is available for implementation. The scanner will add virtually nothing to the cost of the DAT's large scale integrated circuit.

Equipment manufacturers are free to develop a compatible chip that can perform the same functions, maybe more efficiently or at lower cost. And CBS has pledged to license both the encoder and copy code scanner that it has developed on a royalty-free basis for both hardware and software manufacturers.

Thank you once again, Mr. Chairman, for allowing me to testify.

[The statement follows:]

STATEMENT OF DAVID W. STEBBINGS, DIRECTOR OF RECORDING RESEARCH, CBS
RECORDS TECHNOLOGY CENTER

Good Morning, Mr. Chairman, and members of the Subcommittee. I am David W. Stebbings, Director of Recording Research, at the CBS Records Technology Center in Milford, CT. With me this morning is Lawrence E. Gardner, a senior engineer, working on the project. We welcome this opportunity to appear before you today to explain and demonstrate the CBS copy-code system.

THE CBS COPY-CODE SYSTEM: PROTECTION FOR COPYRIGHTED RECORDINGS

The copy-code system has two essential elements. It begins with this electronic device—the encoder. It removes from a master recording a very narrow silver of sound or notch—at a frequency placed so as to fall between the fundamentals, overtones or harmonics of notes on the musical scale. The change caused by the encoding process is inaudible and does not affect the quality of the music. Listeners cannot distinguish an encoded recording from an unencoded recording. To demonstrate, let me play the same brief segment of a familiar Barbara Streisand song from "The Broadway Album"—one from a compact digital audio disc or CD that has been encoded, and one from an unencoded CD—and I invite you to try to identify which is which. Even professional listeners, record producers and studio engineers, have not been able to reliably detect which CD was encoded and which was not.

The second element of the copy-code system is the copy-code scanner, an integrated circuit or chip that is to be built into the recording mechanism of any kind of audio recorder. For example, it may be incorporated into one of the large scale integrated semiconductors or LSI, which are part of the Digital Audio Tape recorder or DAT machine. When someone attempts to tape a musical selection that has been encoded, this chip scans the music looking for the encoded "notch." When the notch is detected, the copy-code scanner inhibits the recording function of the machine for a period of about 25 seconds. The cycle is then repeated; if the scanner again determines that the notch is present, the recording function is interrupted for another 25 seconds. The final tape made from an encoded or "uncopiable" music selection will thus consist of portions of music interrupted by periods of silence.

This is a standard cassette tape recording machine which we have equipped with a scanner of the type I have just described. It will allow normal taping of any album that is not protected with the copy-code notch. The scanner will simply scan the music, determine that there is no notch, and permit copying.

When the music has been encoded with the notch, however, it will be detected and the recording will be interrupted. To demonstrate, we will insert a new premium, music-quality blank cassette into this recorder and attempt to copy the encoded CD you just listened to . . .

Let us listen to what was taped on the machine . . . You notice that the music was interrupted and the same thing will happen whenever an attempt is made to copy music from an encoded source on an audio recording device equipped with a scanner.

THE HRRC'S DEMONSTRATIONS OF AN ENCODED TAPE MISREPRESENT THE CAPABILITIES OF
THE CBS COPY-CODE SYSTEM

The copy-code system was designed by the engineers at the CBS Records Technology Center, and we have developed over the past 5 years very sophisticated units. As you have just seen and heard, our system works, although representatives of the Japanese electronics industry have gone to great lengths to try to show that it does not. I have now witnessed two demonstrations sponsored by the Home Recording Rights Coalition which attempt to show that the notch included in musical recordings using the CBS copy-code system would be audible, and would have an unacceptable effect on the sound quality. Since the HRRC and the Japanese electronics industry have never been given any of the units we have built at CBS, it is apparent that they were demonstrating a system that they themselves had built—not the CBS copy-code system. I am not sure whether to be disturbed or flattered by their attempts to emulate our technology. But the simple fact is that the flaws in their system prove nothing about how well our system works.

First, let me point out that whatever system the Japanese are demonstrating, it is not a true copy of the CBS system. We have yet to release our technical specifications for the encoder to anyone outside the music industry. Moreover, the Japanese engineers appear to have made some errors—perhaps unintentionally—in encoding

the musical recording used for the demonstration. Without getting too technical, let me just state for the record that the encoding notch in the music was cut too wide—far wider than is necessary for the copy-code scanner to recognize and react to the notch. And it was placed on musical notes that were part of the recording in a way that overlapped with audible sound. Suffice it to say that any competent audio engineer could easily avoid any of these obvious mistakes, at least with CBS technology.

I should also note that the Japanese representatives are demonstrating only the function of the encoder device. Such a demonstration is not really responsive to the requirements that would be imposed by the legislation now before you—which relates only to the *other* half of the CBS copy-code system—the copy-code scanner chip, not the encoding device. In any event, as our demonstration here today has shown, a properly encoded musical recording, when played back, is indistinguishable from an unencoded version, and professional sound engineers throughout the studio industry have confirmed that this is true, by extensive listening trials held in their own studios.

Unfortunately, the partisan nature of this issue has generated some biased and inaccurate reportage about the copy-code's effect on audio quality. To comply with a recommendation made by Chairman DeConcini and Chairman Kastenmeier, and in the hope of moving beyond this distracting area of the controversy, we intend to arrange to submit the copy-code for testing by the National Bureau of Standards. We will ask only that they perform their tests in a timely manner so as not to impede the progress of this legislation.

THE JAPANESE ELECTRONICS INDUSTRY'S PROPOSALS FOR PROTECTING COPYRIGHTED MUSICAL RECORDINGS DO NOT WORK

In an apparent effort to fend off U.S. legislation, representatives of Japanese electronics companies and the Japanese Ministry of International Trade and Industry (MITI) have suggested that there is no reason for the music industry to be concerned about the impact of DAT because their machines will conform to a DAT Conference Standard which will prevent digital-to-digital copying. I would like to comment on those assertions.

A. THEY DO NOT PREVENT DIGITAL-TO-DIGITAL TAPING

First, they claim that digital-to-digital copying will not be possible because DAT machines will record at a different "frequency sampling rate" than that at which CDs are played. This may be true for the moment. But the technology already exists for DAT machines which record at a frequency sampling rate identical to the rate at which CDs are played. In fact, the *machines* already exist: they have been shown as prototypes at recent audio fairs and consumer electronic shows by such major Japanese manufacturers as Sharp and Hitachi, among others.

Remember that this DAT Conference Standard is merely a voluntary agreement among various equipment manufacturers; it can be changed at any time. Who is to say that these Japanese manufacturers, or others, won't change their minds next week, or next year, and begin to market machines designed for direct digital dubbing from CDs? And even if the Japanese companies don't, what is to prevent the Korean electronics manufacturers from doing so? Or the Taiwanese?

Moreover, the technology also exists for the manufacture of "converter boxes" that can harmonize the frequency sampling rates of DATs and CDs. In fact, you can buy the chip necessary for such a converter box today, right out of the Sony catalog. It is obvious that the frequency sampling rate differential is small comfort to the copyright owners who are attempting to protect their works.

Second, the Japanese electronics industry's representatives have stated that digital "cloning"—that is, digital-to-digital copying, such as from a CD directly to a DAT or from one DAT to another DAT—will be impossible because of a digital flag code that accompanies the copyrighted musical recording. But the fact is that such a code is easily defeated in a number of ways. For example, anyone who is familiar with computers can write a simple computer program to "turn off" the flag code so that it will not inhibit recording. Easily enough, he or she could use that program in conjunction with inexpensive semiconductor chips to permit digital-to-digital recording. Alternatively, one could build or buy a "black box," probably for under \$50, that would eliminate the flag code.

E. THEY DO NOT PREVENT DIGITAL-ANALOG-DIGITAL COPYING, WHICH PRODUCES COPIES OF ALMOST IDENTICAL QUALITY

The main point is that these so-called protective alternatives are designed to do but one thing—prevent direct-input, digital-to-digital copying—the kind of copying you would do by plugging a DAT directly into a CD player. Putting aside that these alternatives are so easily defeated they do not even effectively accomplish this limited objective, they still permit digital-analog-digital copying which just as surely, and just as completely, undercuts the copyright protection of the recording. All you need to do is plug the CD player either directly or via your stereo receiver into the DAT, using this standard connecting cable which costs about 75¢. . . . The flag code cannot prevent this sort of copying.

The Japanese DAT manufacturers claim that digital-analog-digital copying would entail an unacceptable degradation in the quality of the recorded copy—a loss of about 10 dB of signal-to-noise ratio compared to the original digital recording, and that this would deter would-be home tapers. Now, their 10 dB figure is rather high; engineering studies indicate a loss of only 3 dB. But even if the loss were as high as 10 dB, for most people the difference in sound quality between the copy and the original will be inaudible. The copy would still be of vastly improved quality over what it available through existing technology. With the highest fidelity analog recorder (equipped with the Dolby C noise reduction system), audiophiles can enjoy a signal-to-noise ratio of 75 dB. With a DAT machine, the signal-to-noise ratio can soar to 98 dB. Even after decoding and re-encoding the digital signal by running it through a stereo receiver, tapers will still enjoy a signal-to-noise of 88 dB, which means that a digital-analog-digital copy will sound 4 to 5 times better than the best analog tap available. Moreover, that copy can then be used to produce digital clones, with zero loss of quality, when the home taper uses two DAT machines connected together.

THE CBS COPY-CODE SYSTEM IS READY FOR IMPLEMENTATION, WILL BE INEXPENSIVE, AND IS AVAILABLE FOR ROYALTY-FREE LICENSING

The copy-coding technology that I have demonstrated and described here today is ready now for implementation. The encoding device you see here is ready for manufacture. The circuitry in the scanner we have here is presently being designed in semiconductor chip form, and prototypes will be available shortly for sampling to the industry and for mass production as a part of a large scale integrated circuit.

An important feature of our copy-code scanner is that it is inexpensive when produced in large volume for inclusion in DATs. The scanner is expected to add virtually nothing to the cost of producing the large scale integrated circuits that will go into the machines.

We are confident that the electronic circuitry we have developed is efficient, reliable and suitable for mass production for consumer products. However, if the Japanese manufacturers of audio recording devices believe that they can develop compatible circuitry that can perform the same functions more efficiently or at lower cost, they should be free to do so. That is why the proposed legislation prescribes only the functional requirements of a copy-code scanner, and not the specific engineering solution that CBS has developed. In any event, in recognition of the important benefits this system will provide to all copyright beneficiaries, we at CBS have pledged to license both the encoder and the scanner that we have developed on a royalty-free basis for all hardware and software manufacturers.

Thank you again, Mr. Chairman, for the opportunity to testify. I shall be happy to answer any questions you may have.

Senator INOUE. Thank you very much for testifying, Mr. Stebbings.

Mr. Feldman.

STATEMENT OF LEONARD FELDMAN, ELECTRONIC LABORATORIES

Mr. FELDMAN. Thank you, Mr. Chairman.

My name is Leonard Feldman. I come basically with an engineering background and, while I certainly respect everything that Mr. Berman has said in previous testimony, he made certain technical specification statements which I would like to correct.

In the first place, I would like you to take a look at that machine, the DAT machine, which we fortunately do have here to demonstrate. You will note that it is really no different in appearance from any other previous recorder or any other audio component.

It does not explode when it is turned on. It does not pollute the atmosphere or anything of that nature. It simply records.

The statement was made earlier that it will make a near-perfect recording. Indeed it will. Recording has progressed from Edison's days, as we said earlier, through the cycle of the 78 rpm, the LP, then the stereo LP recording, and finally the compact disk, which we are all enjoying and which has been a great success thus far.

And now we move very logically to the digital era. Just as we went from LP's to compact disks, which are digital in their format, so it is a natural progression to go from the high quality audio cassette recorder which has been around for some years now, to the digital domain recorder.

The question of near-perfection came up in earlier testimony which I was privileged to present, in which we made a demonstration that there is not time for today, but I would like to describe it to you briefly. We played a CD, a selection from a CD.

We played the same selection as recorded onto a high quality audio cassette deck, an existing analog audio cassette deck. Then we played the same thing as recorded onto one of these new DAT's. And we played all three recordings back.

And just as occurred now, you probably had difficulty in distinguishing between the so-called encoded and un-encoded versions, no one could tell the difference.

Senator INOUE. If that is the case, why would I pay \$1,300 to buy something, if I cannot tell the difference on it?

Mr. FELDMAN. Because ultimately this is the way the technology is going. It is digital, it preserves, it does not wear out with repeated playings as quickly. There are many advantages, which I could go into on a technical level.

But the figures quoted before, if we were to take a present day recorder and use Dolby C, which is a noise reduction system, we would be almost at the same quality, not quite, I agree not quite, but we would be almost at the same quality level as what this new machine can do.

In any event, the DAT recording, since you have probably never heard one, I would like to play just a couple of seconds of music from a DAT.

Senator INOUE. Sure. I have got plenty of time. Can you identify this for the record, so we will know who made it?

Mr. FELDMAN. It is a Technics unit. I do not know the model number because it is not available in this country, obviously, and so it has probably a model number as being sold in Japan at this point.

SV-D1000, I am told. But in any case, we would just like to play a few seconds of music.

Senator INOUE. So this is manufactured in Japan?

Mr. FELDMAN. That is correct, sir.

[Recording played.]

Mr. FELDMAN. I am sure we would all like to listen a little longer, but in the interest of time—

Senator INOUE. And that was a recording made by?

Mr. FELDMAN. That was a prerecorded selection. In other words, software that was prerecorded in full digital.

Incidentally, a statement was made somewhat earlier that there is no one—or there is no way of making prerecorded software. I must tell you that there are at least four American companies that I know of, small record companies, who are just chomping at the bit to provide this kind of software.

Here is an example of a demonstration tape by an American company called DMP that is ready, ready and waiting for the hardware to be available, so that they can start selling their prerecorded digital high quality software.

In any event, let me go on to the proposed solution to what may or may not be a problem, as described by my good friend—and we are friends from way back—Mr. Stebbings. In the first place, he keeps alluding to the fact that our demonstration is inaccurate, the demonstration which I hope to present to you in a moment.

The fact of the matter is that among my other duties, I also write for *Audio* magazine. I am one of the senior editors of *Audio* magazine. And *Audio* magazine, strangely, is owned by CBS, the very people who are promoting this idea. And we have repeatedly asked the people at CBS Records, another division, if you will, to tell us, if indeed we are not performing this experiment correctly, please tell us what we are doing wrong; in what way are we falsifying the demonstration?

Thus far, they have refused to do so. I do not know why, really. Perhaps in the course of questioning you may want to address that issue.

But in any case, what I am proposing to demonstrate to you now is exactly the system that CBS' own personnel described to me a year and a half ago, because this is not a new technology. Mr. Chairman, this technology was developed many, many years ago.

It is archaic. It has been lying dormant in their closet, literally, until they saw a possibility of providing it. The technology as described—

Senator INOUE. Maybe I could ask the question now. Why have you people not checked it out?

Mr. STEBBINGS. Straightforward, Mr. Chairman, because Mr. Feldman has just said that it is archaic, I can assure him that, although the basic concept of using a notch and switching off a recorder is an old idea, nevertheless the details of our coder and our equipment of course is subject to continuous improvement.

And it has not been in the closet, I assure him. I would not be worth my salt as an engineer if I could stand in front of you and say that we have done nothing to improve the coder after the last three or four years work, in which I have worked with the record companies and studies and engineers and artists around the world in order to make our system inaudible.

Clearly theirs is not like ours. Ours is inaudible. His is audible. You will hear that in a moment.

Mr. FELDMAN. Well then, as I said, sir, I would simply like to know in what way we are not duplicating the experiment correctly,

so that we might correct our experiment, because it is my contention, sir, that any time you take any kind of a notch out of music you are going to remove part of that music.

I do not care if that notch is one hertz wide. At the moment it happens to be considerably wider than that. But whether the notch is 250 hertz wide, as shown in this diagram—and this is a simulation that we are going to demonstrate, by the way.

This is part of the music that is taken out. It is not in some super-audible region, as you might say, in the supersonic region, where perhaps it might not be audible. This is very near the center of the audio spectrum, and therefore must affect the music in deleterious and degrading ways.

There is no way that you can make that notch narrow enough so that under some musical conditions it will not be heard. Admittedly, one can find music in which it will not be heard, as you just had demonstrated.

But I would say, especially in the classical domain, in piano, in solo piano, in single instrument, in chamber music in particular, you will hear it, and dozens of engineers have heard it and have immediately identified the presence of the notch—not my notch, not as I am going to do it, "incorrectly," but as demonstrated recently by Mr. Stebbings himself in England, where engineers assembled and heard it, as reported in a copy of *Television Digest*, a very reputable publication, which copy is included in my written testimony.

In any event, let me go on and indicate, perhaps in a more musical sense, what we are talking about here. The notch as we understand it—and again, I stress this was told to me by one of the developers of the system over a year and a half ago.

The notch occurs near the upper end of the piano scale, of the piano keyboard. These two notes are directly affected and attenuated if that notch is present.

However, as you well know, I am sure all of you realize that music does not consist of fundamental tones alone. There are overtones or harmonics which contribute to the timbre, the quality of an instrument. A piano sounds like a piano and not like a clarinet because of the content of those overtones.

Therefore, all of the notes that I have highlighted in red would, to some degree, less or more, depending upon where they are as indicated by this scale, be affected by the insertion of this arbitrary notch.

Now; it has been stated that the notch is "between two notes." Well, in modern music or in any music, for that matter, there is no such concept as being between two notes. Does not the violinist use vibratto when he plays? Does he not move the frequency up and down?

Is there such a thing as absolute tuning of an instrument? No. Different orchestras tune to different places. In any event, no notch that I can conceive of can be thoroughly disguised so as to be inaudible under all circumstances.

And if I may, I see time is getting short. Let me proceed to the demonstration itself. First, what we will demonstrate is going to be perhaps a little unpleasant to the ear. It is going to be nothing but

a sweeping tone, if you will, a single solitary tone that is going to move up in frequency right past the notch and then down again.

In the first playing, we will not have used this notch, and so what you should see if you observe the meter indications on the instrument is that the sound will be continuous, it will be a bit disturbing, perhaps. I am sorry for that. But it will be continuous, and there will be no extraction of any portion of it.

If we can proceed with that.

[Audio demonstration.]

Now with the notch inserted, watch what happens to the meter and listen to what happens with the sound.

[Audio demonstration.]

I am sure that was obvious to everyone. There is a difference. But of course, we do not listen to single sweeping sine waves, I grant you that. And so now let us try it with a music instrument.

We are going to have a reproduction now of four piano notes in the region that I indicated, up near the top of the piano keyboard. And I would ask you to listen first to the bell-like quality of the overtones in the four piano notes as they are played.

In the second playing, we will do the same thing we did now. We will insert the notch. It has been inserted in the recording, of course. And notice what happens, particularly to the second and fourth notes in this musical sequence if you would, please.

First, without any of the encoding notch.

[Audio demonstration.]

And now encoded, the second and fourth notes.

[Audio demonstration.]

That perhaps was a little more difficult to detect, but I am sure most of you did. However, for those who did not, we are going to do it again. Please, first without encoding.

[Audio demonstration.]

And now with the notch, second and fourth notes.

[Audio demonstration.]

Did you notice how the overtone, the bell-like quality, of the second and fourth notes disappeared? It became sort of dull-like, almost like a wood block sound, rather than like that clear, sharp piano note.

I wish Ms. Travers were still here to hear this demonstration, because I think she as a pure artist would object to any of her sound quality being modified in any way or in any way altered. Artists pride themselves on the nature of their sound.

Senator INOUE. The purpose of the alteration, I suppose, is to discourage recording, is it not?

Mr. FELDMAN. No, sir. The purpose of the alteration was so that that scanner circuitry—which by the way does not exist as a chip at all. What the gentleman showed you is, he mentioned it would be something like this. It does not exist as yet at all.

But in any event, it is just so that scanner circuitry would recognize the absence of those frequencies. It is on the absence of those frequencies that the scanner system works. That is what makes the system shut the recorder down.

So by putting in the notch—you see, you have to put it in if you want that recorder to shut down. Otherwise, the recorder does not shut down.

And I might add, several major, major recording engineers and recording artists in this country have already heard this and have objected strenuously and say they do not want it and they do not want to use it, it corrupts the quality of their product.

We feel certain that, if you were able to detect the effect of this notch filter that this sort of musical degradation would introduce to future records and tapes if Congress passes one of the several proposed bills to restrict audio technology—even worse, the notch might very well not be limited to future prerecorded digital tapes.

It was said here that every old recording can still be copied effectively. But what happens when you have to remake those recordings? Recording companies do not have infinite inventory, and when those recording company people would go back they can do it to LP's, they can do it to re-issues of LP's, re-issues of CD's.

Even, I might add—and this is not generally known—a radio broadcaster could now put this notch right in his signal line and restrict you from recording anything broadcast over the air on a DAT machine, of course.

In other words, all you need is the notch, and if that machine then has to carry that scanning device it will shut down when you record radio programs, even TV sound, because the TV broadcaster can see this as a way of preventing the copying that was legalized by the Supreme Court, simply by inserting the notch in all his audio channels, and you try to record it on a DAT machine, you cannot do it because that same DAT machine will shut down even on the sound portion of a TV program if this thing proliferates.

In any event, the freedom to make tape recordings in your own home for non-commercial use is, as we said, being threatened, and so is the high fidelity quality of records and tapes that you might want to buy now or in the future. And it is really the high fidelity aspects that concern me most as a technical person.

Thank you very much, sir. If there are any questions, I will be happy to answer them.

[The statement follows:]

STATEMENT OF LEONARD FELDMAN, OWNER, LEONARD FELDMAN ELECTRONIC
LABORATORIES

Mr. Chairman and members of the subcommittee, my name is Leonard Feldman. I have been involved in the audio and video industries for more than 30 years, both as an engineer and as a product evaluator and technical journalist. I have written 7 books on audio subjects and currently I am senior editor of *Audio* magazine and technical editor of *Video Review*. I serve as a representative from the United States to one of the technical committees dealing with audio standards of the International Electrotechnical Commission ("IEC"), a world standards body. I am a member of the Institute of Electrical and Electronic Engineers ("IEEE") as well as of the Audio Engineering Society ("AES"). I own my own laboratory and consulting firm. And for 7 years I have been a consultant to the Consumer Electronics Group of the Electronic Industries Association.

My reasons for urging you not to enact S. 506 are simple. Digital audio tape recorders, or DATs, are a step forward in technology. The CBS anti-copy system mandated by S. 506 is a step backward. I will explain what the DAT does do, what it does not do, and why. And, I will demonstrate that, as recording engineers and music critics here and abroad have found, the encoding system chosen by my friends at CBS does, indeed, distort any music in which it is inserted.

WHAT THE DAT DOES AND DOESN'T DO

The DAT is an important evolutionary advance in home recording technology. It combines the recording technique perfected in the VCR—recording heads mounted on a rotating drum, with the tape moving past at an angle—with the digital electronics used in compact disc players as illustrated in this diagram. In fact, for several years, you and I have been able to make digital home recordings, by buying something known as a digital audio processor, and hooking it up to any VCR. You can do this today, for about half of what a DAT is expected to cost. But you would be lacking the convenience, compactness, and ease of operation that the new format will offer. Here is a DAT tape. See how much more compact it is than a standard analog cassette or a Beta or VHS video tape.

DAT'S WILL NOT MAKE DIGITAL-TO-DIGITAL COPIES OF PRERECORDED MUSIC

The DAT specifications that resulted from an open international conference took into consideration the question of digital-to-digital copying.

By digital-to-digital copying we mean hooking up the electronic pulses directly, without converting back to analog music frequencies, so as to make an electronic copy that is a perfect clone of the input. The DAT system provides for a "flag" or digital code to be placed in the digital data to indicate to any digital recorder that digital-to-digital recording should not be allowed. This special digital code, if included in a CD recording or on a future DAT prerecorded tape, can be set so that digital-to-digital is not possible.

The DAT conference required DATs to read and respond to this code. When a DAT reads this code, which is there thousands of times a second, it stops recording. Unlike the proposed CBS anti-taping chip system, however, this does not interfere with the DAT's ability to record the same material after it has been converted to analog form and reconverted to digital. This type of recording, which is not all that different from what consumers have been able to do for their own use with ordinary cassette tape recorders that have been around for nearly 20 years, would result in a recording that is three times (10DB) noisier than the original.¹ The result is still a very good recording—slightly better than you can do with some of the best consumer analog audio recording systems available today—but by no stretch of the imagination a "perfect master" or "digital clone."

This digital copy prevention code is already on most of the digital masters from which compact discs now on the market have been made. As it is not part of the music, it has no effect on quality. A second copy-prevention method incorporated in the DAT standard is the use of a different digital sampling rate—48KHz—than the 44.1 KHz rate used in recording CDs. (The "digital sampling rate" is the number of times per second the frequency curves are measured, or sampled, when they are converted into digitized pulses.)

The DAT is unable to record at the 44.1 KHz rate. So digital-to-digital recording from CDs is prevented by both a belt—the digital copy inhibit code—and suspenders—the different CD sampling rate. Moreover, most CD players on the market don't even have digital outputs.

In summary, what the DAT does is make high quality recordings through its analog inputs, of quality comparable to the best analog decks presently available—which is quite good, indeed. But if you want digital master quality, you have to buy a prerecorded digital tape. These will be so superior to the prerecorded analog tapes available now that, personally speaking, I can hardly wait. Although I understand, from the May 11, 1987 issue of the respected trade publication *Television Digest*, that five major record companies have announced a world-wide boycott of the DAT format, I know that several smaller companies are very interested in putting out prerecorded DAT software as soon as possible, and that duplicating facilities are already available.

THE CBS COPY-CODE SYSTEM IS A SEVERE STEP BACKWARD IN AUDIO TECHNOLOGY

The CBS "anti-copying" chip system that would effectively be mandated by S. 506 represents a reversal in the long-term trend of improving the sound quality of home music reproduction systems. Most obviously, it prevents any type of copy from being made from any encoded source. Therefore, if the CBS encoding scheme were applied

¹ Theoretically, this digital-to-analog-to-digital conversion could be done with a loss of only 3 DB, but as a practical matter, the foreseeable state of the art in digital-to-analog and analog-to-digital converters is such that the loss must be about 10 DB. The decibel (DB) scale is logarithmic; a gain of 3 DB means a doubling in power.

to a vinyl recording of a 1938 Caruso performance (as I expect it would be), it could not be copied on a DAT, for playback on a DAT car stereo.

Aside from this intended effect on home taping, research has revealed that the very encoding used by the CBS system, because it is in the form of a notch cut out of the music, distorts the playback of any recording so encoded. Thus, even if I never want a DAT or even a CD, and I want to stick to playing back high quality vinyl records, the CBS encoding will make these records sound appreciably worse when I play them back. The same degrading effect would be present if this system were applied to video sound tracks, or to broadcast sound transmitted over the airwaves.

FREQUENCIES ON THE PIANO KEYBOARD ARE FILTERED OUT BY THE CBS ENCODING

Let us take a closer look at the CBS system. CBS has maintained that the frequencies involved in its filtering process are "above the range of fundamental tones of musical instruments." Figures 1 and 2, clearly refute that statement. The upper diagram of Figure 1 shows the frequency range that would be affected by the introduction of the notch filter. The filter affects frequencies from 3715 HZ to 3965 HZ, while the frequency of greatest attenuation occurs at 3840 HZ. Figure 2 relates this notch frequency range to a piano keyboard. It is clear that the presence of a CBS frequency "notch" will have a direct effect upon the highest A-sharp and B-natural keys of a standard 88-key piano, for example, since these notes have fundamental frequencies of 3720 HZ and 3951 HZ respectively.

It is less obvious that many other notes of the piano (or any other musical instrument that is rich in harmonics) would also suffer. The lower portion of this diagram (Figure 2) shows the relative effect upon these lower tones. For example, the A-sharp and B-natural notes a full octave below the ones most affected will also undergo serious degradation. Although their fundamental tones will not be attenuated, the harmonic content of these lower notes falls right in the region of the "notch" and will therefore be severely attenuated. A piano, like most musical instruments, produces sounds that are rich in harmonic content. Remove the harmonics and you remove the qualities which make a piano sound like a piano, a violin sound like a violin, etc. As the lower diagram (Fig. 2) shows, overall sonic content of other notes on the keyboard will also be affected by the introduction of the notch filter, though to a lesser degree.

In addition to the alteration of the harmonic content of notes recorded in the presence of such a notch filter, several other harmful effects on program sources will occur.

SEVERE PHASE DISTORTION

Refer once more to Figure 1. The lower diagram shows that extreme phase (or time-relationship) distortion occurs at or near the center frequency of the notch. Many audio critics condemned early Compact Disc players because they exhibited a slight phase error at the extreme high frequency end of the audio band. Objections were so great over this phase shift problem that most makers of CD players now employ new circuit techniques to overcome that phase distortion. Yet, here is a proposal for a filter that would put much more severe phase distortion right smack near the middle of the audio spectrum.

THE CHIP SYSTEM COULD TURN OFF RECORDINGS OF UNENCODED MATERIAL

Under certain conditions, the frequency notch upon which the CBS system depends might occur even with program material that has not been encoded. What the CBS chip looks for is 2 conditions: An absence of signal content in its narrow band of frequencies that have been filtered out, and the presence of signals in frequencies on either side of the notch, as illustrated in this diagram (Figure 3). That additional "search" is needed so that the "chip" won't shut down a recorder if you happen to record something that has no musical content at the frequency of the notch.

Now, consider these next illustrations (Fig. 4). A violin's output waveform is very similar to that of a sawtooth wave. That type of waveform contains a fundamental tone and many harmonics above that fundamental. Suppose a note having a pitch somewhat lower than 1/6th that of the "notch" frequency were produced by a violin. The sixth and seventh harmonics of that note would fall on either side of the notch frequency, meeting both conditions for recorder shutdown. The anti-taping encoding example is shown in the lower half of the diagram (Fig. 4). A clarinet produces a waveform very similar to a square wave. A square wave produces funda-

mental frequency plus all the odd harmonics, (3rd, 5th, etc.) of that frequency. Again, there is absence of signal content only at the notch frequency and presence of signal content in the region above the notch. Again the recorder would shut down—unintentionally. While the statistical chances of such an improper shutdown are small, there are nevertheless quite possible.

I should note here that, according to the *Television Digest* article to which I have referred, CBS might be attempting to narrow its notch, in response to determinations by expert listeners that it causes audible distortion. Such a narrowing would significantly increase the chances of "false positives"—prevention of recording music that has not been encoded, and it not even prerecorded.

HOW THE CBS NOTCH FILTER DISTORTS THE MUSIC

At this time, with your kind permission, I should like to demonstrate just a few sound examples of how the presence of "notch" filter in program content could alter the sound of that program material. (Demonstrations)

Any number of similar demonstrations could be performed to illustrate the corruption of sound quality introduced by such frequency elimination within an important part of the audio spectrum. Indeed, according to the report in *Television Digest* to which I have referred, a demonstration held recently in London by CBS itself resulted in a convincing determination that the notch audibly distorts music. Here is how *Television Digest* reported on the presentation by Mr. Stebbings:

"Stebbing acknowledged, in effect, that roomful of engineers could tell difference between Copycoded and unaltered recording. At special demonstration in London's famous Abbey Rd. studios there was no question—almost without exception, engineers were able to identify when Copycode was inserted into recording. However, in some musical selections there wasn't agreement Copycoded to non-Copycoded version was preferable. Upon request of one hi-fi journalist, CBS prepared solo piano tape with Copycode, played top 4 notes with and without encoding. On playback, difference was absolutely clear to everyone present—with clunking sound of bad piano on Copycoded version. This was point at which Stebbings said coding of some passages could be optional."

According to the *Television Digest* report, even at another demonstration held under the auspices of the International Federation of Phonogram and Videogram Producers (IFPI)—the London-based association of record companies that has vigorously been promoting the CBS system—some critics heard audible distortion in CBS' own recordings. According to the *Television Digest* report:

"Geoffrey Horne, highly regarded critic of Gramophone magazine, said of solo on choral recording: "That little choir boy was badly damaged..."

Mr. Chairman, it has been gratifying, in the course of my career, to see high fidelity music develop from inventors' and tinkers' dreams to practical reality, available to an appreciated by more and people every day. I urge you not to mandate into law a system that damages music, as well as artists, industries and consumers. The synergy of high quality equipment and high quality recordings has never operated better, for the benefit of all concerned. The future is even more promising, if we simply will let it develop.

Thank you for having given me the opportunity to appear today.

EFFECT OF THE ANTI-COPY CHIP ENCODER
Upon tonal content of music and upon
stereo imaging and accuracy.

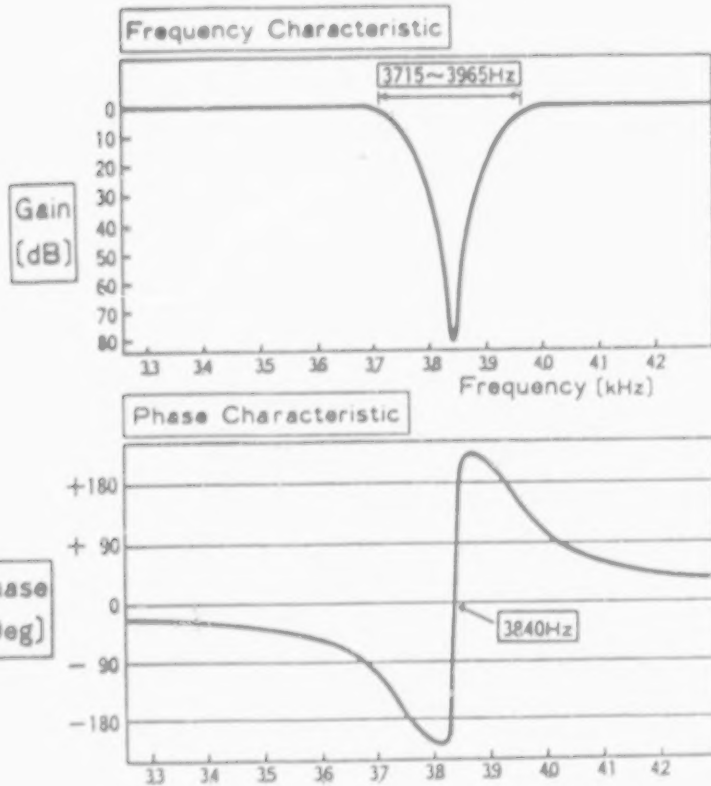
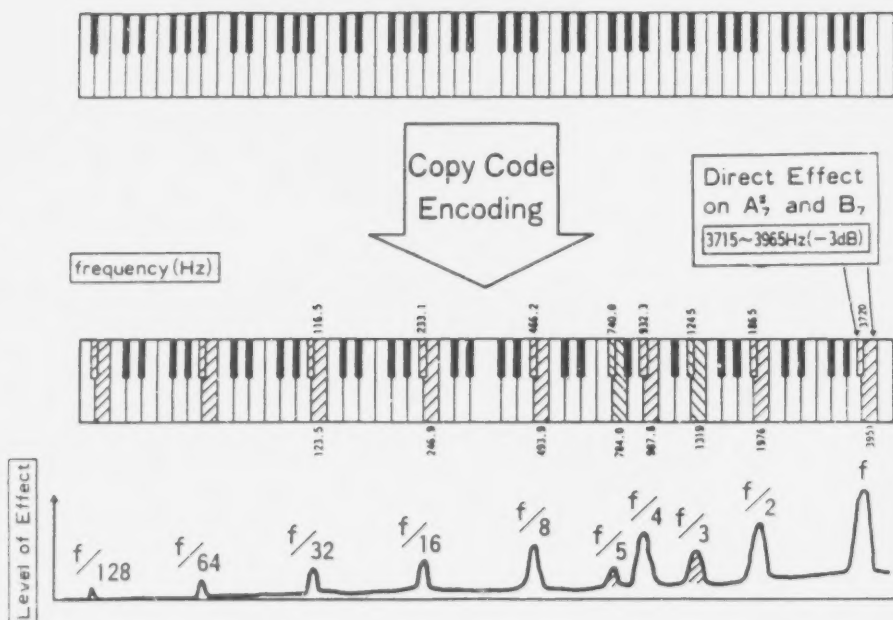


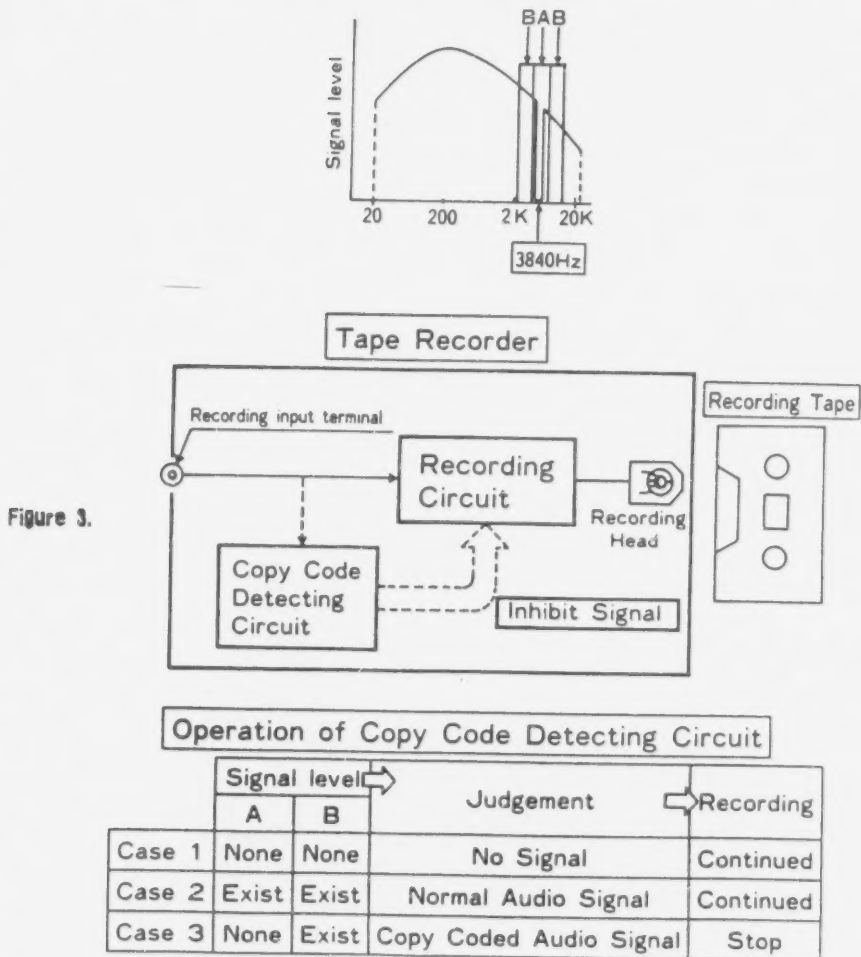
FIG. 2.—THE ANTI-COPY "NOTCH"

Eliminates Musical Notes
Alters Musical Instrument Sounds



THE ANTI-COPY CHIP CAN "MAKE MISTAKES"

It might disable recorders even when
"unprotected music" is being recorded!



UNRELIABILITY OF THE ANTI-COPY CHIP

Ordinary instruments, such as a violin,
clarinet, can "confuse" the chip!

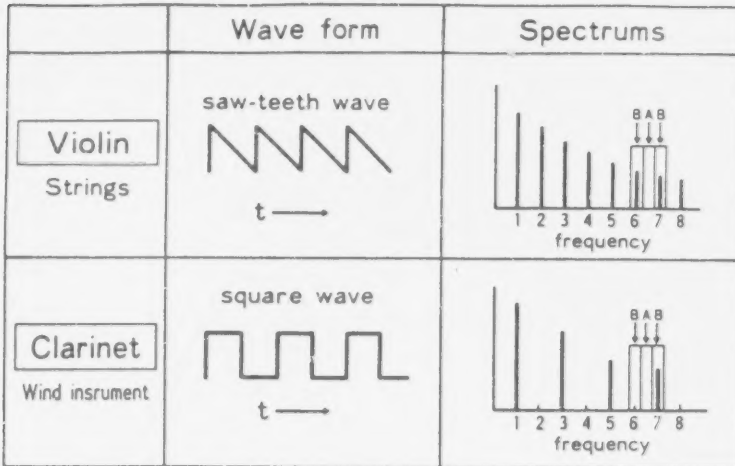
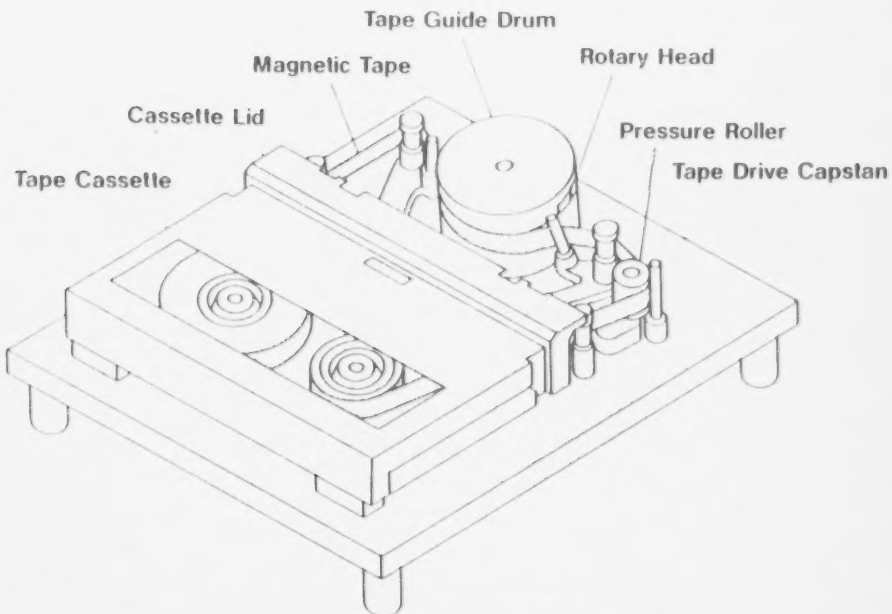


Figure 4



Schematic Diagram of R-DAT

Senator INOUE. Thank you very much.
Mr. Weingarten.

**STATEMENT OF FRED W. WEINGARTEN, PROGRAM MANAGER,
COMMUNICATION AND INFORMATION TECHNOLOGIES, OFFICE
OF TECHNOLOGY ASSESSMENT**

Mr. WEINGARTEN. Thank you very much, Mr. Chairman. I am Fred Weingarten. I am Program Manager of the Communication and Information Technologies Program of the Office of Technology Assessment, which is a Congressional policy research agency.

Since you have indicated earlier that the written testimony will be submitted for the record, I would like, in the interest of brevity, just to make a few comments highlighting the main points and then be available for answer questions.

Our testimony is based on a report released in April, 1986 titled *Intellectual Property Rights in an Age of Electronics and Information*. I should say that we have not analyzed any specific legislation and OTA does not take positions for or against specific bills. That is not our job.

We have also not examined or tested any particular chip or encoding technology. Evidently that is true of many people. Still, our report contains several findings that in our view do pertain to the deliberations of the committee, although I do not think we can provide answers. We provide more questions, and that is understandably frustrating.

The tenor of the report reflects points raised in some of the testimony this morning. We are in the midst of enormous technological change in the way information is created, disseminated, and used in our society, and that technological change is undoubtedly moving large chunks of intellectual property protection out from under traditional legal approaches.

OTA suggested that the Congress over the next decade or two would be faced with a fairly serious task of re-evaluating our societal interests and potential approaches we should take to protecting the creation and protecting and preserving those flows and societal interests in access to information.

Three particular points in the testimony that I think are relevant or raised in the previous testimony here are as follows:

In the first place, I think it has been generally agreed that the legal status of home taping under existing law is unclear. Despite the fact that lawyers, acting as advocates, will argue at various times that the law is clear; yet, they will argue that the law is clear in completely different ways depending on what side they are trying to present.

The increased capability technology gives individuals in their homes to manipulate, communicate and copy information raises new kinds of questions about where the balance should be drawn in letting people make use of the intellectual products and the technologies that are available and restricting activities that seriously damage the interests of the producers.

Our second point is that the amount of home taping and the relationship to the market impact on the producers is very unclear. Most of the data that is available (or that we have found) is data

that has been collected and distributed by people who are parties to the debate.

It is part of OTA's bias that survey data comes loaded with questions. There has been very little neutral or objective analysis of the amounts of home taping and of the amount home taping that does occur displaces purchase or in some place actually supplants the market for prerecorded tape.

Finally, we raised in our report the general issue of technological fixes and the appropriateness or enforceability of technological fixes. In this case certain questions are raised.

In the first place, there is what I might call a "consumer issue." To our understanding, this technology has never been tested in a neutral, objective environment for its cost, for its effectiveness, for the degree to which it can be bypassed or disabled, for the extent to which it degrades music, or (a point raised in earlier testimony today) the degree to which it might inhibit other types of uses that may be in store for this type of technology—computer data storage, storage of video, other forms of digital information that can be stored in this format.

Secondly, there is the question of enforcement. In order to enforce a law requiring that such a technology be installed in a device, one then in general would need to follow-up making it illegal to disable or remove that technology.

That gives the Federal government a new enforcement role in intellectual property. Traditionally, intellectual property has been what the lawyers refer to as a self-enforcing body of law. In this case, Customs officials and domestic law enforcement authorities would have a new area of concern.

As I said at the start, we are at the threshold of enormous technological change, and information technology is a basic infrastructure of our society. It supports economic activity. It supports social and political activity. And it presents us with great opportunities, but it also presents us with some very deep policy problems.

If we err too much in preventing the use or the distribution of these technologies or the exploration of new uses, we threaten the future viability of our society. And yet, if we do not act to protect those producers of the software and the information and the data bases and the computer programs that we need to make that technology work, we will also suffer.

Thank you, Mr. Chairman.

[The statement follows:]

STATEMENT OF FRED W. WEINGARTEN AND LINDA GARCIA, OFFICE OF TECHNOLOGY
ASSESSMENT

Thank you, Mr. Chairman. It is a privilege to be asked to appear before this subcommittee to discuss OTA's work on intellectual property as it related to digital audio taping.

My comments today will be based on our report, *Intellectual Property in an Age of Electronics and Information*, released in April, 1986. The testimony was prepared with the able assistance of Ms. Linda Garcia, project director, and Mr. Robert Kost, legal analyst on that study.

FINDINGS FROM THE OTA STUDY

I should caution that we have not done a detailed legislative analysis of any bill regarding digital audio taping (DAT), nor have we analyzed the specific technologies for protecting against copying that are specified in various bills. Nevertheless, sever-

al of our study's findings seem to bear directly on the considerations of Congress. These findings are:

Current law is ambiguous about whether private copying is covered, or was ever intended to be covered, by copyright law;

Current estimates of whether, and to what degree, home recording harms producers lack a firm and reliable theoretical and empirical basis;

Digital audio tape recording may present quantitatively different problems than conventional analog tape recording, insofar as copy quality does not degrade over generations of copies;

Technological approaches to preventing copying vary in their effectiveness and are generally defeatable over the long run;

Nontraditional mechanisms for providing intellectual property rights often require a greater role for government than traditional ones;

The global nature of intellectual property problems increasingly requires that they be resolved on an international basis and that they take other international policies into account;

And the copyright problems presented by digital audio tape are very likely the precursors to further problems in the recording industry and in copyright-based industries as a whole—problems that may require more comprehensive solutions.

Based on these findings, I would like to suggest a number of questions that the Committee might ask and a number of factors that it might consider when evaluating legislation of this kind.

QUESTIONS AND FACTORS FOR CONSIDERATION

1. In considering any bill that would create a right to revenues from private copying—whether through a technological protection scheme or a tax on blank media such as audio or video tape—the first question to ask is whether Congress wants to explicitly prohibit unauthorized home copying. To date, the status of home taping under copyright law is unclear. As a policy matter, Congress has yet to explicitly decide whether copyright is just the right to control commercial use—the use of a work for profit in the marketplace—or whether it also provides the right to control private use—the use of a copy after its ultimate sale. As a legal matter, there have been no court decisions that hold copying for private use to be illegal. In *Sony v. Universal Studios*, the court held private use for “time shifting” as legal, fair use, but let open the question of whether private use for any other purpose is illegal. Further, the legislative history of a 1971 amendment to the Copyright Act, which first extended copyright protection to sound recordings, indicates that Congress did not intend the copyright holder's right to reproduce work precluded other, private use, particularly “home taping.” A House Report accompanying the amendment says:

“Specifically, it is not the intention of the Committee to restrain the home recording, from broadcasts or from tapes or records, of recorded performances, where the home recording is for private use and with no purpose of reproducing or otherwise capitalizing on it. H.R. Rep. No. 92-487, 92nd Cong., 1st sess. 2 (1971).”

Although this language affirms the legality of private use, some contend that the law remains ambiguous, because the Copyright Act of 1976 does not reiterate this 1971 qualification.

2. Setting aside the legal question of whether the copyright law does prohibit home recording, that home recording causes producers significant harm by displacing sales has so far not been demonstrated. There are no reliable estimates of the extent of lost revenues caused by home recording.

Furthermore, in determining the effect of home taping on revenues, one needs to take account of the nature of the marketplace and the ways in which it would change were home copying effectively proscribed. For example, existing estimates of lost revenue do not take into account such factors as:

Whether producers would charge higher or lower prices for their products if home taping were prohibited.

Whether consumers who copied at home had additional disposable income they were willing to spend on prerecorded material.

The extent to which home taping increases the value of prerecorded products by extending their utility.

The extent to which the ability to copy increases the value of the hardware, increases the number of recorders sold, and, hence, increases the potential market for prerecorded music.

The extent to which individuals who engage in home taping share, give, or sell copies to others outside the home, thus potentially displacing the market for commercially prerecorded music.

Finally, the particular case of DAT raises a new question, whether the very high quality copies possible with DAT will change current home taping behavior.

The extent to which copy quality affects consumer behavior determines whether the issues raised by DAT are, in fact, significantly different than those previously addressed by Congress with respect to analog recordings. The software industry which also sells digital products, may be an instructive example.

3. Assuming for the moment the illegality of private copying, the Congress, in considering legislation that relies on technological solutions to prevent copying, will need to ascertain how effective a particular preventative device might be. Some systems are relatively easy to defeat; others are more difficult. In any case, this approach is often unworkable over time, because the technology changes rapidly.

Although OTA did not examine any particular devices in great detail, it did come to some general conclusions about technological solutions. OTA found that technological approach to protection often require a trade-off between the security of the intellectual property and its accessibility, marketability, cost, and quality. Furthermore, while any technological barrier may work in some cases by acting as a "stop sign," warning against unauthorized use, no form of technological protection is 100 percent effective against determined opponents. Over the long run, new technologies will reduce the effectiveness of these devices. Moreover, the higher the level of society's computing skills, the more difficult the job of technological protection becomes.

4. Because use of technological devices is a nontraditional approach to enforcing copyrights, the Congress might also want to look at the extent to which, and how, the Federal Government might need to be involved in order to make a technological solution stick. Insofar as these technologies are susceptible to bypass or deactivation, to accomplish this the Government would, first of all, have to make such modification illegal. Then, in order to detect and enforce this prohibition, either the government or private parties would have to conduct some form of search, inspection, or surveillance. In addition, if such laws entail the control of imports into the United States, an additional burden of enforcement must also be taken into account. Courts could also experience a greater workload to the extent that deactivating or bypassing technological devices result in civil lawsuits. Notwithstanding increased government involvement, however, such laws may be institutionally very hard to enforce since they attempt to govern how people use their personal property in the privacy of their homes.

5. There are international implications of using trade restrictions as a way of dealing with intellectual property problems. As the OTA report points out, attempts to resolve international intellectual property problems are likely to be more effective when they are undertaken as part of a multilateral effort. The unilateral imposition of trade restrictions might lead to retaliatory restraints on trade and to deteriorating international relationships. And, if the United States is the only country to impose such restrictions, then such a policy could have only limited impact on the amount of copying worldwide. There is a danger, moreover, that if intellectual property policy is established in the context of trade issues, it may be skewed from its original goals.

6. In reviewing this specific legislation, Congress may want to consider whether, when, and how often this industry and others will require special, supplementary legislation because of innovations in technology. Technologies that are currently on the shelves and in the labs promise to provide unprecedented capabilities for producing, manipulating, regenerating, and distributing all types of information, including audio, video, data, text, and graphics. And, these systems are increasingly affordable to small organizations and individuals, rather than just to large industries.

One emerging technology in the field of analog videocassettes, for example, allows the reproduction of video programs with little quality degradation after many generations of copies. Erasable/re-recordable versions of the compact disk are being developed to store and copy digitized video, text, and graphics—along with audio. This will affect the recording, motion picture, television, publishing, and computer industries.

Looking into the 1990s and beyond, as the telephone and cable television networks develop sophisticated capabilities for transporting and processing large amounts of all types of information, the flow and exchange of information will greatly increase and become more difficult to monitor or control. Already, some of these new capabilities, such as facsimile transmission, have begun to flourish. These innovations

may entail still further legislative action; next time perhaps in the broadcast or common carrier arena.

In short, the controversy surrounding digital audio tape is only the beginning of the problems Congress will face in adapting an 18th century law to the new technologies coming to the fore today.

CONCLUSION

Finally, I would like to develop a point about the broader and longer term context of this and similar legislation. A basic theme in much of OTA's work on information policy is that new information technology has sharpened the dilemma that Congress and the Courts face in trying to balance the need to encourage the dissemination of information against the need to restrict its use, for economic, national security, or other reasons. The remarkable advances in microelectronics have greatly empowered the individual to influence the way information is created, disseminated, and used in our society. *Attempts to control information flows too tightly may either fail or be so draconian as to be legally and socially unacceptable, as well as economically costly.* Yet, as in the case of intellectual property, *it is often in our vital interest to provide control or other incentives for the development of new information products and to protect those products from misappropriation.* There is no doubt that information is becoming increasingly valuable to our society, both as a marketable commodity in its own right and as a basic factor of economic and social activity.

Because of the difficulties in enforcing laws that regulate private activity, OTA found that it is important to design such laws so they can gain broad public acceptance. This appears to be possible, given OTA's finding that the public "draws the line at behaviors that infringe on intellectual property rights when they involve the obvious or active circumvention of payment, when they are done for sale or profit, or on behalf of business or in a corporate setting." While providing protection, such a law would need to take into account the desire by individuals to share in the benefits that the new information and communications technologies afford.

Although we have not examined any bill in any detail, our study suggests how such an analysis might proceed. Figure One, for example, suggests six criteria that might be used to evaluate any proposed legislation. These criteria are: effectiveness in meeting overall system goals, efficiency in achieving goals, enforceability, durability, precision as a policy, and congruence with international and other national systems. Corresponding to these criteria are a number of research questions that might be asked to determine how well the criteria can be met and a number of indicators that serve to answer these questions. The broad scope of the table illustrates the magnitude and complexity of intellectual property issues and suggest that decisions made about them be consider in a broad policy context.

FIGURE 1

Evaluative criteria	Questions for research	Indicators/types of information that might be collected
1. Effectiveness in meeting overall systems goals		
A. Creation and dissemination of creative, informational, and scientific works	Degree of creativity	- Evaluations of creators, critics, users - Output of works - Number of prizes offered in these fields - Number of people engaged in these fields - Interactions of members of the creative environment
	Availability	- Number and variety of informational resources - Evaluations of creators, publishers, producers, users - Diversity of works - Price of works - Opportunities for access - Evaluations of creators, publishers, and producers - Level of output
	Congruence of incentives	- Emergence of new fields - Number of scientists/technologists - Number and quality of scientific publications - Interactions between members of the scientific/technical community - Patents issued - Awards granted - Evaluations by members of the scientific/technical community
B. Enhancement of the learning environment	Degree of scientific and technological development	- Emergence of new fields - Number of creators - Condition of products/distribution industries - Availability of resources for creation/production/distribution - Awards granted - Market for creative works
	State of the arts and entertainment	- Evaluations by national educators/businessmen/parents/National Science Foundation/etc. - Life expectancy - Test scores - Availability and qualifications of faculty/teachers - Quantity and quality of educational materials/information-based resources - Interactions among members of the educational community
	Overall condition of education	- Development of new industries and profit-making opportunities - Percentage of employment - Number of firms - Contribution to gross national product - Use of information-based products and services in non-information industries - Balance of trade
C. Economic growth and development	Growth of information-based industries	- Institutional costs - Transactional costs - Social costs in terms of achieving systems goals - Benefits measured in terms of achieving system goals - Estimates of harm due to infringement/lack of intellectual property protection - Profit margins - Industry competition - Estimates of economic value of intellectual property rights to proprietors
	International competitiveness	- Institutional costs - Transactional costs - Socioeconomic costs/benefit in terms of achieving system goals
2. Efficiency in achieving goals	Costs and benefits of granting rights	- Public/institutional behaviors - Technological capabilities to access/reproduce/reformat information-based products and services - Privacy of use and decentralized access to reproductive/access and communication technologies - Technological capabilities to preclude authorized access/use - Transaction costs - Technological capabilities to monitor access/use - Public attitudes/support for the system
	Costs and benefits of alternative measures for achieving system goals	- Frequency of legislative revision/amendment - Resort to alternative forms of protection - Consensus in cases of first impression - Consistent/coherent application of law - Public attitudes/support for the system - Extent of infringement - Acceptance of decisions by parties in dispute—i.e., number of appeals - Extent of unresolved issues—i.e., fair use, copyrightability of computer software - Internal coherence/consistency of law - Resort to other forms of protection - Overlap with other law
3. Enforceability	Extent of infringement	- Quality, quantity, independence of available information - Number of agencies involved - Cross-cutting issues - Interested congressional committees - Convergence of stakeholder interests - Intensification of issues - Roles of different kinds of information-based products and services - Economics of different kinds of information markets - Public attitudes toward different types of information-based products and services - Technological characteristics of different information-based products and services
	Ease of detection	
	Legitimacy of the system	
4. System durability	Flexibility in the face of change	
	Legitimacy of the system	
	Ability to resolve conflicts/harmonize interests	
	Reliability/predictability as a guide to action	
	Robustness of principles	
5. Precision as policy tool	Predictability of outcome	
	Independence/compatibility with respect to other policy areas	
	Sensitivity to differences among different kinds of information-based products and services	
6. Congruence with international and other national systems	Ability to resolve conflicts	- Enforcement mechanisms - Level of infringement - International court cases - Resort to other policies mechanisms to deter infringement—i.e., trade sanctions - Level and participation in international regimes - Scope of international treaties - Incompatibilities with international law—i.e., informalities - Policy conflicts and inconsistencies
	Harmony with other intellectual property systems	
	Competibility with other international regimes—i.e., GATT, UNESCO	

SOURCE: OTA Report, "Intellectual Property Rights in an Age of Electronics and Information"

Senator INOUE. Gentlemen, I thank you very much.

Because of the very great technical, legal nature of the question before us, I would hope that you would respond to any questions that we may submit to you.

I am not qualified to be asking you any technical questions, but I could hear whatever you are trying to demonstrate. It sounded like a carpenter pounding instead of a piano being——

So we will keep the record open until such responses are received.

We have received several letters in favor and in opposition to the measure before us. Without objection, those letters will be made a part of the record.

Thank you once again for your help.

[Whereupon, at 12:55 o'clock, p.m., the hearing in the above-entitled matter was adjourned.]



ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

STATEMENT OF DONALD J. QUIGG, ASSISTANT SECRETARY AND COMMISSIONER OF
PATENTS AND TRADEMARKS, DEPARTMENT OF COMMERCE

Mr. Chairman and Members of the Committee: I appreciate the opportunity to appear before you today to discuss S. 506 that provides for the use of new copy-code scanner system in digital audio recorders.

BACKGROUND

Ever since the day the Constitution first empowered Congress to promote the "Progress of Science and the Useful Arts," our laws have sought to achieve the delicate balance between the need to ensure an adequate reward to artists for the enjoyment by others of their creations and the right of the public to enjoy them. The ultimate goal, of course, is to ensure that Americans have available to them the quantity and quality of works that the intellectual property system was designed to give them.

Today, however, developments in technology as well as the ability of entrepreneurs to identify new needs and to develop new markets pose a constant—and healthy—challenge to that balance. We are continually called upon to examine intellectual property concepts in light of these changing developments. In my view, an intellectual property system that (a) induces a songwriter to compose something that people want to hear, (b) induces an inventor to develop a machine that makes it easier for them to hear it, and (c) forces us to take a fresh look at the relevant statutes, is doing the job the framers of the Constitution intended two centuries ago.

That, of course, brings us to the problem that faces us today. Before the development of modern audio recording devices, if you wanted access to a recorded song, you bought the record. The authors' exclusive rights to reproduce their works that are the heart of intellectual property law was unassailed in principle and unassailable technologically. This is simply no longer so.

The private copying of copyrighted works has been one of the most important and one of the more difficult issues facing copyright policy makers. Advances in audio recording devices permit consumers to duplicate, at very little cost, recordings without the permission of, or payment of a royalty to, the copyright owner. The introduction of digital audio tape recorders will make these problems only more acute. To meet the challenges of changing technology, we must devise an equitable and workable system for compensating creators of intellectual property that minimizes Government involvement without impairing public access to both music and the fruits of technological advances.

ECONOMIC HARM CAUSED BY UNAUTHORIZED TAPING

Some private copying of copyrighted works by individuals might fall within fair use, a doctrine originally intended to permit use of portions of copyrighted works for scholarship and research. In the course of coping with advances in reproduction technology this doctrine has been stretched to include such diverse concepts as photocopying of entire journal articles in *Williams and Wilkins v. U.S.*, and off-the-air home video taping (for time-shifting purposes only) of broadcast television programming in *Sony v. Universal Studios*. Unlike the facts in the *Sony* case, home audio taping is often done for the purpose of retaining a copy to build a library.

Without such copying, home libraries would be built with purchased, authorized copies. In 1980, the *Market Research Study* by CBS records indicated that home taping costs the prerecorded music industry \$700 to \$800 million annually. A more recent Audits and Surveys study found that the equivalent of 564 million albums were taped annually. Based upon those figures and other industry estimates, Dr. Alan Greenspan estimates that home copying cost the recording industry more than \$1.4 billion in 1982. While other surveys come up with different figures, there is every indication that home copying costs are real and substantial. The net commer-

cial effect of this copying, one of the most important tests of the fair use doctrine, indicates the abuse of that doctrine in the context of home audio recording.

SOLVING THE PROBLEM

A new technological development can bring better quality sound recording into American homes, providing the recording and music industries with markets for new media formats. This technological advance is the digital audio tape (DAT) recorder. It can bring very high quality sound recordings into the home and give the consumer the ability to make his own digital tape recordings with "compact disc quality." The problem facing the recording and music industries, however, is that the digital audio tape equipment also gives the consumer an increased incentive to copy prerecorded tapes, records, or compact discs. Tapes produced by such devices will be virtually indistinguishable from the original prerecorded medium in terms of sound reproduction quality. This is a quantum leap from current analog tape copies which are inevitably inferior in recording level and quality to the original product.

Fortunately, the same technology that has spawned the potential problem has developed a solution. There is a method of encoding sound recordings in a way that renders them uncopyable on a DAT recorder if it is equipped with an appropriate copy-code scanner device. A recording is encoded by periodically removing sound in a narrow band at certain frequencies. The copy-code scanner in the recorder monitors that frequency range, and when it detects such a "notch" in the frequency range, it turns off the recording capability of the recorder for a period of about 30 seconds. Thus, an attempt to copy an encoded sound recording will result in a copy with intermittent gaps of silence. The use of this system will not affect the copyability of existing recordings on either analog disks, tapes, or compact disks, as the information contained on them is not encoded. Neither will it affect a consumer's ability to copy his own original recordings.

LEGISLATIVE PROPOSAL

Both S. 506 and the Administration's proposed DAT legislation in S. 539 make the use of copy-code scanners mandatory in all digital audio recording devices. This would give the recording industry a way to stop the unauthorized DAT reproduction of sound recordings. Accordingly, the Act would make it unlawful to engage in manufacture, importation, distribution, or sale in the United States of digital audio recording machines that do not incorporate copy-code scanning devices, preventing unauthorized reproduction of phonorecords. Further, it would be unlawful to import, manufacture, sell or lease, any products or services that have the primary purpose of deactivating a copy-code scanner.

While both S. 506 and the Administration's proposal prohibit bypassing or deactivating a copy-code scanner, the Administration's proposal would also prohibit the production of encoded phonorecords, unless such records are protected under title 17, United States Code, and the producer is the copyright owner or has his authorization. The latter prohibition would ensure that works in the public domain would be copyable.

The Administration's proposal would also provide that parties, such as importers of machines that comply with the terms of this Act, would sue for injunctive relief against parties engaging in practices in violation of this Act. To discourage frivolous or nuisance suits, the court could require a plaintiff to post bond before granting injunctive relief. S. 506 further provides that an aggrieved party may also recover either actual or statutory damages.

Both the Administration's proposal and S. 506 provide that the Attorney General of the United States or his designee could also bring an action for injunctive relief, and criminal actions could be instituted as well. Further, both would permit the court to impound machines that do not contain a copy-code scanner, as well as any products that would violate this Act while an action is pending. Again, the Administration's proposal provides that the court could require a bond as a condition for impoundment.

Both bills also authorize the Department of Commerce to issue rules and regulations permitting exemptions for digital recording devices. Some persons may need to reproduce encoded phonorecords for legitimate business reasons that are not related to infringement of any right under the copyright law. As a consequence, some flexibility is needed. Also, the Administration proposes that the U.S. Customs Service would be authorized to seize imported digital audio recording devices that do not contain copy-code scanners and to enforce forfeiture requirements under provisions of the customs laws.

The Administration proposes that the requirement for the copy-code scanner would be permanent while S. 506 provides for a three-year sunset provision. This is the major difference between the two bills. It is our hope that an act requiring use of the copy-code scanner would be in effect before digital audio recording devices are introduced into U.S. commerce. Expedient enactment will help to avoid the problems which could arise from the presence in this country of machines without the copy-code scanner and will provide more effective protection for copyright owners.

This new technology will prevent unauthorized home taping and compensation will be received from those who wish to copy from sales of copyable recordings at presumably higher prices than those charged for noncopyable records. Under this approach, recording companies would be in a position to set a higher price, including a royalty for copyable recordings, based upon the expected higher value consumers would be willing to pay for such recordings. Consumers who did not wish to copy could purchase lower-cost, encoded tapes, that would be playable (but not copyable) on the encoder equipped recorders. This approach fosters market determinations of royalty levels and distribution patterns. Copyright holders would be compensated according to the sales of copyable records, and artists could be expected to negotiate for their respective shares of that compensation.

Some have questioned why the Administration supports this trade-based approach to solving what may be essentially a copyright issue. The copyright industries as a whole, and the sound recording and motion picture industries in particular, are world leaders who earn substantial revenues. The Administration is convinced that the widespread importation of machines that encourage the unauthorized reproduction of copyrighted sound recordings will result in lost sales, thus, impairing this industry's competitive posture and reducing the incentives to songwriters and producers provided by the copyright law.

Marginal areas such as new music forms, jazz, classical, and the like may be the first to feel the loss. We are only proposing that DAT recorders be equipped with decoders to prevent further injury to songwriters and sound recording producers. It is just not fair for one industry to profit by trading on the products of another.

Some have also argued that, if a DAT bill passes, the principle of "fair use" will be severely damaged. We see the answer here as rather simple. Many copyright scholars—including the late Professor Nimmer—argue that the sheer volume of unauthorized copyright of sound recordings precludes considering home audio taping as fair use. In other words, the issue here is not "fair use," it is an issue of preserving the economic vitality of an important U.S. industry.

Some have suggested that this approach to the DAT problem could be the basis for other countries to take similar measures in other areas. It is our opinion that this bill gives us an almost unique opportunity to address a threat to the rights of copyright owners in an anticipatory manner. We expect DAT to replace analog tape just as compact disks are replacing records. If DATs come equipped with an effective means of stopping unauthorized copying, there will be a smooth transition from the present situation to one in which copyright owners can, if they choose, prevent the unauthorized copying of their works.

We also believe that this approach is appropriate. The so-called "DAT Conference Standard" being promoted by MITI will not provide effective protection. It can be easily bypassed.

Some have characterized the DAT proposals as anti-technology. The unauthorized duplication of copyrighted works is a technologically generated problem. This proposal uses a technological fix to solve the problem, and uses the market mechanism to assure the distribution of royalties. Copyright owners will be able to decide whether they want to sell copyable or uncopyable recordings and consumers will be able to make a choice to buy them or not. Thus, the market will determine whether consumers are willing to pay for the privilege of copying and royalties will flow to songwriters and sound recording producers whose works are copied. The proposal can hardly be called antitechnology as it uses technology to assure that unauthorized taping is precluded. Sales of DAT recorders to record copies sold without the encoding would be unaffected.

Others argue that there will be some adverse effect on sound recording quality if we adopt the copy-code system. I am not a recording engineer, but I have heard notched recordings and I could not detect any impairment of sound recording quality. In any case, the proponents of this system, the sound recording producers, will not want to market a product that has impaired sound recording reproduction quality. The Japanese proponents of DAT recently prepared a demonstration tape that presented the "notching" of a recording in the worst possible way. Even though they chose to place a wide notch—cut right over particular solo piano notes—one of my colleagues, who heard the demonstration, could not detect the effects. In this

connection, even if effects were heard, demonstrations aimed at showing that the approach is not effective would be less effective than those showing positive capabilities.

In summary, the Administration's DAT proposal would put in place a permanent bar to the introduction of non-decoder equipped DATs into U.S. commerce. The proposal in S. 506 would sunset in three years.

The Administration believes that its proposal is an appropriate response to a problem that has strong links between intellectual property protection and trade. We believe that using the trade laws to assure that copyright owners' rights are not eroded is appropriate. However, we understand Congress' desire to explore the possible impact on the copyright law of this approach.

We believe the problem facing the U.S. songwriters and sound recording producers is real and its solution is urgent. On that basis, we suggest that this legislation should be permanent. If a permanent solution is enacted in the copyright law, that legislation can repeal this Act.

STATEMENT OF ALEXANDER H. GOOD, DIRECTOR GENERAL, U.S. AND FOREIGN
COMMERCIAL SERVICE

Mr. Chairman and members of the subcommittee, I am pleased to be here today on behalf of the International Trade Administration (ITA) of the Department of Commerce to discuss the role the department plays in the implementation of the Trade Development Program (TDP), an agency of the International Development Agency (IDCA).

I would like to note the assistance which the International Trade Administration—particularly the units known as the United States and Foreign Commercial Service (US&FCS) and Trade Development (TD)—provides TDP.

Trade Development's Office of International Major Projects (OIMP) is the focal point in Washington for helping engineering-construction firms secure project contracts overseas. OIMP works closely with TDP identifying projects where feasibility studies would enhance the prospects for follow-on exports of American goods and services. TDP is also an active member of the major projects coordinating group, which develops an interagency strategy to assure our industry's participation in key foreign construction activities.

OIMP has worked closely with TDP since its inception in 1975 as country-financed technical services.

Many US&FCS offices abroad work closely with TDP and serve, in many instances, as TDP's staff and offices abroad. US&FCS officers speak enthusiastically about TDP as a catalyst for U.S. exports. We believe that TDP is an effective tool for expanding U.S. exports.

Many US&FCS is the only Federal agency with a mandate to promote the export of U.S. goods and services which also has the domestic and foreign offices to carry-out that mandate. Part of the US&FCS job is to promote and project U.S. business interest abroad.

US&FCS has many services available to support and to counsel U.S. firms. Some of the services of US&FCS—such as trade missions, identification of potential commercial agents for U.S. products, and market studies—rely entirely on Department of Commerce resources in Washington or our 48 district offices in the U.S. or our 128 commercial offices in U.S. embassies and consulates overseas. US&FCS also does a great deal of field work in fructuring the interests of the export-import Bank (EX-IM) and the Overseas Private Investment Corporation (OPIC) in those countries in which the US&FCS has a presence.

There is a mutuality of purpose and objectives shared by the US&FCS and TDP.

In March, AID Administrator Peter McPherson wrote to Secretary Baldrige about TDP. He said that the \$75 million which TDP has obligated has generated almost \$650 million in additional U.S. exports. Mr. McPherson also expressed his appreciation for the support US&FCS provides TDP.

During Secretary Baldrige's recent Asia-Pacific visits, he signed two TDP projects in Beijing and one TDP project in Manila. Secretary Baldrige and Chris Holmes also indicated in Seoul that TDP would fund a feasibility study for pollution control. We have found that we can strengthen our commercial relations and improve access to host-country governments if we can bring something to the table. TDP accomplishes this by making it possible for us to offer support for its projects. The TDP concept is a tried and true marketing tactic widely used in business. If you can have your product's technical characteristics written into the client's specifications, you have a

comparative advantage to win the contract. TDP's studies are written to U.S. specifications.

US&FCS works closely with host-country governments to define projects and reports this information to TDP for review and a decision. In the 10 countries in which TDP has the greatest activity, US&FCS has been the primary representatives for TDP in 8 countries. Of the 74 countries in which TDP operates, US&FCS has been the primary representative in about 60. Moreover, TDP representatives participate in the US&FCS regional meetings each year.

During the past several months, I have met with our senior commercial officers in Europe, the Middle East and Africa, South Asia and the Far East. Several US&FCS officers in the less-developed countries identified TDP as the single most valuable tool available to the carrying out of their job. Because these US&FCS officers represent TDP in their respective countries, they have easier access to key government officials. TDP also enhances our contact and relationship with U.S. firms.

US&FCS commercial officers emphasize that almost all of our foreign competitors have export enhancement programs similar to TDP. If the US&FCS did not have a close association with a similar program, U.S. export promotion efforts in some countries would be hindered. Let me give you some examples about how US&FCS and TDP work together to increase U.S. exports.

In Ecuador, US&FCS negotiated a TDP feasibility study to expand Ecuador's telecommunications capabilities, encompassing rural telephone centers, satellites and new radio communications potential. The contract was signed just a few weeks ago. We anticipate that the U.S. telecommunications industry will begin to feel the effect of the TDP-supported study within the next 18 months.

In Egypt, US&FCS learned that the government wanted to study a project to drain an agricultural area. USAID, which has a \$1 billion program in Egypt, declined to consider the project. The Dutch offered to do the study free. US&FCS sent a cable to TDP in Washington recommending we offer a similar proposal to the Egyptians. It was reviewed and the feasibility study was approved, offered to the Egyptian, and funded. Because of the swift response by US&FCS and TDP, U.S. companies will now have the opportunity to enter an Egyptian market previously closed to them.

In Thailand, US&FCS officers were instrumental in identifying and negotiating contracts for a \$200,000 lignite development study, a \$450,000 Bangkok flood control project, and \$475,000 waste to energy project, all of which resulted in new business for American companies. In fact US&FCS Officers over the past 3 years have negotiated \$4.4 million of contracts for TDP in Thailand.

In the People's Republic of China, a TDP grant for a feasibility study of a packaging adhesives factory was signed. Our US&FCS officer in Shenyang reports that press coverage of the signing has kindled increased interest among the Chinese about opportunities for business with the U.S.

In general, we can say US&FCS officers do the following individual tasks to help generate U.S. exports via TDP; US&FCS:

- Identifies possible projects and puts on paper specific proposals;

- Negotiates between the host government and TDP;

- Facilitates TDP trade missions;

- Assists TDP in securing a feasibility study; and

- Assures that U.S. companies benefit the results of the TDP feasibility study.

In summary, the U.S. and foreign commercial service is the primary source of information and the principal contact with host-country governments where we have a commercial organization. While our officers are working for TDP on a no cost basis in identifying specific projects and working with host-country government to negotiate feasibility contracts, they also are working for all U.S. businesses that have the opportunity to benefit from those contracts.

Our experience worldwide has been that the U.S. and foreign commercial service officers handle the negotiations in-country and communicate directly with OIMP and TDP in Washington. In some cases, US&FCS represents TDP at the formal signing of the feasibility study contracts. This program has been good for the U.S. and foreign commercial service in that it adds yet another arrow to our quiver of export services and programs, while providing an invaluable service to TDP.

I believe the U.S. and foreign commercial service has been good for the Trade Development Program in that this organization, with limited staff, can capitalize on the experience and expertise of our overseas officers. This allows as much as 90% of their appropriated funds to be used for grants which assist American business, and less than 10% to be used for overhead.

Mr. Chairman, thank you for the opportunity to provide the views of the Department of Commerce on this important trade program and the US&FCS role in TDP. I welcome your questions and comments.

STATEMENT OF STEVLAND MORRIS

Please accept my sincere appreciation for the opportunity to express my opposition to The Digital Audio Recorder Act of 1987, S. 506 (hereinafter S. 506).

As you may know I am a recording artist and composer. In both these capacities I use advanced computers and high-tech audio equipment. Over the past fifteen years I have worked diligently to bring to reality the best audio equipment our minds can conceptualize; this task has not been easy. It is because of my extensive involvement in the research and development of new audio equipment that I have developed an understanding of many of the issues raised by S. 506.

The Digital Audio Tape Machine ("DAT") creates high fidelity recordings that are superior to any other conventional analog tape recorder on the market. This new technological advancement has many redeeming qualities. Some of the benefits of the DAT are as follows; 1) artists can make high quality tapes of their live performances; 2) artists can make high quality tapes of their music while traveling on the road or simply at any location outside of the home base studio; and 3) struggling new artists with low production budgets can make high quality demonstration tapes for presentation to record companies.

Like many consumers when I tape prerecorded music I select songs off of albums I already own. These tapes are for my personal use only and not for resale or any commercial purpose. In addition, I frequently purchase prerecorded audio cassette tapes. As with the conventional tape recorder, I would like to make tapes for my personal use with the DAT machine.

Many of the arguments made against the use of the DAT were used in an attempt to ban the VCR. However, those arguments have proved to be unfounded. Today the prerecorded video market is a viable and substantial industry. I submit you that the DAT will flourish like the video cassette market. Moreover, the advent of the DAT will further stimulate the interest of the American people to the music industry.

Finally the copy code scanner system supported by S. 506 will unnecessarily limit the usefulness of the DAT. More importantly the encoding process has the effect of distorting the music. Consequently, I like other artists, am opposed to the efforts of those who want to encode our music. I take great pride in trying to provide quality music to the public and I am distressed to learn that the integrity of my music will be compromised by the encoding process.

In summation I oppose S. 506 and I respectfully request that you keep my views in mind.

Thank you.

STATEMENT OF CHERYL J. HOLLINS, EXECUTIVE DIRECTOR, CAR AUDIO SPECIALISTS ASSOCIATION

I am Cheryl Holins, Executive Director of the Car Audio Specialists Association, generally known as CASA.

CASA is a non-profit trade association founded in 1978 to represent the aftermarket car audio industry. Its members are domestic companies and individuals who are engaged in the manufacture, importation, distribution, sale and installation of audio equipment.

We have asked for the opportunity to appear before the Commission because of our concern that misunderstandings about the nature of competition in our industry could lead to inhibitions on the importation of car audio equipment which would be the death knell for the independent, the so-called "aftermarket" suppliers of such equipment, who are presently struggling for survival in the face of unrelenting anti-competitive pressure from the automobile manufacturers, primarily the domestic manufacturers but also the foreign ones.

As you know, most aftermarket car audio equipment is foreign sourced. Statistics compiled by the Electronic Industries Association, however, show that some 160,000 jobs are generated in the United States by the autosound industry. Not only are these jobs threatened by anticompetitive actions of the automobile manufacturers, but so is the freedom of choice of consumers as to the type and brand of automotive sound equipment that they may have in their automobiles. In fact, over 10,000 consumers have evidenced their support of CASA's efforts to restore or at least prevent further erosion of their freedom of choice.

Familiar brand names sold on the aftermarket are Kenwood, Jensen, Alpine, Pioneer, Blaupunkt, Audiovox and Kraco. Aftermarket products range from simple AM radio units at 50 dollars, to medium range AM stereo/FM stereo and cassette systems priced at 750 dollars, to highly sophisticated combination stereo and compact disc systems with multiple speakers costing well over 2,000 dollars.

Aftermarket car audio equipment is largely sold by home electronics stores, by car audio retail outlets and by car dealers themselves to the extent that the practices of automobile manufacturers allow them to do so. Autosound equipment is also sold for do-it-yourselfer installation by mass merchandise and automotive parts and accessories outlets.

Since the days when the Ford Motor Company sought to forestall sales of aftermarket radios by installing a solid, almost impervious dashboard in all cars that were ordered without factory installed radios, car manufacturers have used one means or another to resist free market forces in the sale of car audio equipment.

Car audio is a big business!

According to the Venture Development Corporation, an independent market research firm headquartered in Massachusetts, total sales of car stereo equipment at the factory level reached 2.7 billion dollars in 1985. Venture Development says that stereo sales will approach 3.1 billion dollars at the factory level in 1991. At retail, that's 4 billion dollars. But, during this six-year period the aftermarket, it is predicted, will lose market share, slipping from 41.3 percent in 1985 to 34.5 percent in 1991. And when you look at market share for car audio equipment installed in new cars, a distinct segment of the total market, market share tilts dramatically in favor of the car manufacturers.

Statistics from Ward's Communications show that over 92.4 percent of all domestic 1986 model cars sold in this country were equipped with radios selected and installed by the automobile manufacturers. The most recent statistics for foreign cars show a factory audio installation rate of 73 percent in 1985. That left less than 8 percent of all domestic cars and 27 percent of all imports for aftermarket sales.

The figures supplied in our pre-hearing brief show the correlation of rising factory audio installation rates and declining after-market sales. The figures tell the story, yet they understate the degree of automobile manufacturer preemption of aftermarket radio sales because car dealers also install factory-supplied radios in vehicles after they arrive at the dealership.

To understand the extent of the preemption of competition, you really have to look at individual automobile manufacturers. Ward's Communications' statistics show that the domestic car manufacturers have the highest audio installation rates among all auto makers. For instance, Chrysler Corporation has a factory radio installation rate of 97.2 percent.

How does this come about?

Because radios have been made standard equipment on millions of new cars—In fact 92.4 percent of all cars sold today by the Big Three alone come with a standard equipment radio and the majority are costly stereo and cassette tape systems. In the 1983 car model year the figure was much lower—73.7 percent. As you know, standard equipment means that it comes with the car. There is no choice, it is not a negotiable option, except in those few instances when a radio delete option is offered, and if the consumer knows it is available and if he special orders a car from the factory. Otherwise, the delete option is only offered to car dealers when they order vehicles for inventory. So, if the radio delete option is not requested, the car is delivered with a standard equipment radio—and that's a guaranteed "sale" for the car manufacturer. Ever since CASA's "free choice" radio agreements with several automobile companies expired in 1984, more and more cars have been sold with standard equipment radios and fewer cars have been offered with radio delete options.

And this is not all. The automobile manufacturers have effectively eliminated competition from the automobile radio market by other onerous practices. They are:

Failure to reveal the full cost of radios to consumers who are unaware that the average price of standard equipment radios is now \$400;

Upgrading the level of radios on new cars by installing more expensive sound equipment, which costs as much as \$1,500 to consumers who are misled about the full cost of upgrade radios;

Promoting sound equipment as a "free" item on the car by various marketing techniques;

Loading new cars with expensive radios at the factory or port increase profits;

Bundling and loading new cars with accessories that are part of a package of options which frequently contain radios;

Coercing new car dealers to order factory radios rather than sound equipment sold by an independent supplier;

Integration audio equipment with other vehicle functions, thereby making installation of alternative equipment and repair of original equipment difficult or impossible;

Failure to provide full credit for audio equipment removed by consumer request; Allocating cars to dealers loaded with expensive audio equipment that are high profit items;

Gradually eliminating the factory radio delete option as a special order option for the few consumers who order new vehicles from the factory; and

Failure to offer car dealers credit and return policies without requiring purchase of another factory radio, or not offering any return policy, thus placing dealers in the position of "getting stuck" with radios removed from cars in stock by consumer request.

Automobile manufacturer practices not only affect new car audio sales but also upgrade or replacement sales for vehicles in use. How does this happen?

On a growing number of cars audio equipment is integrated with climate controls and other vehicle systems, thus substantially complicating or totally precluding installation of aftermarket audio systems in such cars. And electronics integration is rapidly escalating.

Aftermarket radios cannot be fitted into a growing number of new cars due to the positioning of radio controls on steering wheels and to the housing of radios in pod-mount configurations.

The consumer's investment in factory radios is costly and rising—in some vehicles as much as 1,500 dollars. This deters many consumers from purchasing two radios, the factory unit which they are forced to take with the cars and the aftermarket audio system which the consumer may wish to purchase from the aftermarket.

Consumers are often told that vehicle warranties can be voided or they perceive that such warranties will be invalid, if aftermarket audio systems are installed in their cars.

Automobiles are highly sophisticated and installation of audio equipment will be increasingly limited to professionals, thus restricting or deterring do-it-yourselfers and budget-conscious consumers from replacing factory radios.

With one exception, credits offered for removal of audio equipment are not full credits for the factory radios and, therefore, deters dealers from removing radios by consumer request and it deters consumers from removing factory equipment in which they have made a substantial investment.

The future of the car audio aftermarket in the U.S. market and the fate of consumers choice is grim.

The strength of the automobile companies lies in their ability to control both technology and the automobile environment, to deny free choice to consumers and to stifle competition in the autosound market. The auto makers are effectively destroying an innovative car audio aftermarket that fosters competition which benefits consumers and the American economy.

Certainly, the need for a repair and replacement market for factory systems is but one reason for car audio specialists to remain in business. Certainly, product innovation and fair prices are others.

Today, the aftermarket is the source of most technological innovation in car audio electronics. At a time when autosound technology is giving birth to new features in the aftermarket, when sound reproduction is improving dramatically in quality, and when a wide variety of products are available at competitive prices in the open market, choices should be proliferating for consumers, yet they are diminishing.

Where is the free choice in automotive entertainment options that Ford and General Motors executives advocated in 1977 during a Congressional hearing? When Congress considered legislation to require installation of factory AM/FM radios on all new cars, the auto companies defended free choice. Perhaps their greed for profits has changed their views about the benefits of free choice.

Let CASA go on record as a staunch advocate of free choice and open and free competition in the autosound marketplace. The aftermarket should have an open road to contribute to the economy and to provide consumers with a choice of products and features that fulfill their entertainment needs and desires at a price that meets their budget.

We urge that the economic situation in which the car audio aftermarket industry now finds itself, not be exacerbated by any trade action which would contribute to making that industry's battle for survival even more perilous, perhaps to the point of obliteration.

CLASSIC MASTERS,
Brooklyn, NY, May 7, 1987.

HON. DAVID INOUE,
Chairman, Commerce, Science, and Transportation Subcommittee on Communica-
tions, Washington, DC.

DEAR SENATOR INOUE: I am the president and producer of Classic Masters, a small, independent classical label with releases available on cassette, LP, and digital compact disc. I am also a recording engineer in the greater New York area whose concert and festival tapes regularly air over MPR (Minnesota Public Radio), NPR (National Public Radio), and the three classical stations in New York. As such, I am sensitive to the needs of musicians as well as to the somewhat different conditions governing the health of my small niche in the recording industry.

I am in production of my first DAT, and intend to produce further digital audio tape cassettes as my resources permit and the market allows. I am desperately concerned that provisions in the Senate Bill before you, S. 506, would seriously cripple the great promise that I, as an engineer and as a business man, am unable to ignore as I study this new recording medium. Just as the conventional cassette came to join the black vinyl LP record, DAT has become the promised tape compliment to the compact disc.

The proposed CBS copy-preventing system is inelegant, from an engineering point of view, archaically based upon technologies that have since been replaced with modern methods, and . . . most important to music . . . degrades the very sound it's alleged to protect.

Having spoken with many others in the music business, with engineers familiar with the proposed alteration to the music signal, with responsible observers of the industry, and with my own label artists, I am astounded at the level of concern about the way the bill's proponents suggest denaturing the music. I have heard demonstrations of the proposed copy-prevention "hole in the music" and have concluded that it is both audible and degrading to music.

As a small, independent label, DAT cassette releases appeal strongly to my artists and to me as a logical compliment to the highly successful compact disc. Other small labels, who are as much friends and colleagues as they are business competitors, will, I believe firmly, find new opportunities opened to them by the birth of DAT as well. I see DAT as a significant, even crucial part of Classic Masters' future.

I submit, as someone who is happily a-straddle the two, co-existing fields of music and the recording industry, that the crude, unnatural, and poorly conceived CBS coding system would not only be an unacceptable degradation of the music I sell on recording, but would be positively offensive to the very ears on which my business prospers or falls . . . those of my musicians. I will not use such an anti-musical, poorly engineered system in Classic Masters releases.

Why, when five generations of engineers and music lovers have worked so hard to make it possible to record and play music as realistically as science allows, should we put our shoulders to a wheel so illogically poised to roll backward?

Gentleman, please oppose this legislation.

Please include this letter in the official record of the hearings on this issue.

Most sincerely,

CHRISTOPHER GREENLEAF.

CASA,
CAR AUDIO SPECIALISTS ASSOCIATION, INC.,
Washington, DC, May 11, 1987.

HON. DANIEL K. INOUE,
United States Senate,
Washington, DC.

DEAR SENATOR INOUE: This is to follow-up to our earlier correspondence of April 13th urging you to oppose digital audio tape (DAT) restrictive legislation, S. 506.

We understand that the Subcommittee on Communications is holding a hearing on May 15 to consider this bill. As you know, S. 506 restricts DAT technology by requiring the inclusion of copy-code scanners in all digital audio recording devices sold in the United States.

Our industry, the car audio aftermarket, would be adversely affected by such taping restrictions. Due to anti-competitive practices by the domestic car manufacturers, who lead the foreign car importers in factory installations of autosound equipment, the aftermarket is uniquely dependent on new technology, such as DAT, for our very survival. The car audio aftermarket is being locked out of the very

market which they created. DAT is the one new technology now ready for market that promises to restore some balance to the unfair competition in the car audio market—at least for the near term.

DAT playback units for cars also afford us a new opportunity to meet consumer demand for quality autosound. Sales of playback units for cars, however, are directly dependent on the consumers' ability to use tapes which they will record on DAT units they purchase for home use.

We ask that you oppose S. 506. Taping restrictions on DAT could ultimately mean the demise of the car audio aftermarket, an industry which employs over 160,000 persons throughout the country.

Please consider the points we have outlined on the enclosure showing how, not only our industry, but also consumers, will be adversely affected by taping restrictions on DAT.

Sincerely,

CHERYL J. HOLLINS,
Executive Director.

STEREO REVIEW,
New York, NY, May 12, 1987.

Senator DANIEL K. INOUE,
Hart Senate Office Building,
Washington, DC.

DEAR SENATOR INOUE: As Editor-in-Chief of *Stereo Review*, the country's largest-circulation hi-fi equipment and recorded music magazine, I am submitting the attached editorial, from our June 1987 issue, in connection with your hearing on S. 506.

Also in connection with that hearing, I am submitting the attached letters to the editor that were published in *Stereo Review's* June issue. These letters are representative of our readers' response to a news item in our April issue describing the proposed copyguard system and an article about digital audio tape in our March issue. Of all the letters we have received on the subject—I estimate about 50 so far, and they're still coming—not one has been favorable toward the copy-guard system.

I ask that this letter and its attachments be made a part of the hearing on S. 506.

Yours truly,

LOUISE BOUNDAS,
Editor-in-Chief.

Enclosures.¹

DIGITAL MUSIC PRODUCTS, INC.,
New York, NY, May 12, 1987.

Senator DANIEL K. INOUE,
Hart Senate Office Building,
Washington, DC.

DEAR SENATOR INOUE: I am the President of Digital Music Products, Inc. ("DMP"). DMP is engaged in the production and marketing of recordings of jazz oriented music. All of DMP's product is recorded digitally and marketed on compact disc. Because of our commitment to offer to the marketplace only the highest quality of recorded music, DMP does not offer its product for sale on traditional vinyl phonograph records, but only on compact disc, where a far superior level of musical accuracy and harmonic integrity can be assured. It is this commitment to quality in the reproduction of recorded music that inspires me to address the issue now being considered by you with respect to manufacturing and marketing of tape players utilizing the digital audio tape ("DAT") format. I request that this letter be included as part of the hearing record.

Firstly, I have had personal experience in working with the DAT format, judging the reproductive capability first hand, and observing the potential of the format. I am convinced that it is a reliable and exceeding well engineered format.

In the same manner as the tape cassette format replaced cartridge tape, and as the compact disc format is now endeavoring to replace vinyl records, the recorded music industry must be open to change in its formats. Over the past fifty (50) years many technical improvements have dictated changes in consumer tastes. Products

¹ The attachments were not reproducible.

such as the 78 rpm disc, albums sold on reel-to-reel tape, and tape cartridges have vanished from the marketplace for no other reason than the recorded music industry's ability to offer better and more convenient ways for the consumer to reproduce and enjoy recorded music.

At present only the compact disc containing music recorded in a digital format can offer to the general consumer music recorded and reproduced without the annoyance of tape hiss, distortion or the ever present surface noise emanating from a phonograph record. Only music which is both recorded and reproduced digitally can be truly experienced by a listener in its natural state, allowing the listener to experience a clarity of sound heretofore only available while attending a live concert. In the current marketplace there is a need for an all digital format to provide to persons who desire to listen to music in its finest state the opportunity to do so, whether it be in their automobiles, in their personal tape players (i.e. "walkman-type devices") or in other locations where circumstances are not appropriate for use of a compact disc player. DAT players will serve to satisfy this share of the buying public, as well as those who simply would desire to add a DAT machine to their home or office stereo systems.

Many perceive that the use of DAT tape machines for "home taping" purposes will endanger the survival of the entire phonograph record industry and that the only hope for its continuance is to restrict the recording capacity of the DAT machines. I do not deny that DAT machines can offer higher recording quality than any other home taping devices currently available, but to limit the capacity of such a machine by requiring the installation of an anti-taping chip, as well as the implantation of a sonic "notch" in all pre-recorded software is not a viable remedy. Please consider the following:

1. The sonic "notch" which would be implanted in all pre-recorded software would serve to limit the quality of the recorded sound contained on such software. This serves to defeat the basic purpose of DAT, i.e. to offer to the consumer the finest quality of recorded music;

2. The sonic "notch" will complicate the reproductive process of the original recording by adding distortion and destroying the all digital potential of the format.

3. The addition of the sonic "notch" in all software as well as the installation of the anti-taping chip will add cost to both the DAT machines and the software, thereby imposing economic restraints on the potential of DAT in the marketplace.

"Home taping" has always existed since the introduction of reel-to-reel tape recorders for home use and will continue to exist. It is impossible to determine the number of phonograph records that are currently transferred from disc to cassette or from cassette to cassette for any number of reasons or purposes. This problem is not to be cured by limiting the reproductive capacity of one format while allowing it in another. True audiophiles have recently learned that copying a record onto video tape will render a higher quality copy than is normally available by transferring a record onto cassette. Standing in the way of the DAT format will not serve to prevent home taping, it will only serve to preclude those who appreciate listening to music the opportunity to hear it at its best.

In my opinion DAT should be viewed as an opportunity for growth and expansion of the recorded music industry. I support its use and feel that it should be made available to the public without limitation on its quality or potential. DAT offers a greater range of musical accuracy and realism than has ever before been available. I look forward to marketing DMP recordings in the DAT format.

Very truly yours,

THOMAS J. JUNG,
President.

LORANGER MANUFACTURING CORP.,
Warren, PA, May 13, 1987.

HON. DANIEL K. INOUE,
Senate Hart Office Building, U.S. Senate, Washington, DC.

DEAR SENATOR INOUE: I am writing to urge my strong opposition to legislation that your Subcommittee is considering—S. 506. This bill would cripple a new technology—the digital audio tape ("DAT") recorder—that holds enormous promise for American consumers and for other sectors of the American economy. I ask that this letter be made a part of the hearing record of S. 506.

I am writing to you because S. 506 would deprive my company, Loranger Manufacturing Corp., of a significant business opportunity. As importantly, the anti-DAT legislation places Congress squarely in the middle of deciding between two comple-

mentary formats—compact disc and DAT. I believe that decisions about formats, and about the legitimate business opportunities presented to the private sector, should be left to the marketplace—and not appropriated by the federal government.

Loranger Manufacturing Corp. is a medium size business based in Pennsylvania employing approximately 300. We began business in 1950. We manufacture audio cassettes and other audio products for record companies and retailers. Our customers include Ford, IBM, Kodak, as well as many small retailers nationwide. Our sales volume is \$20 million.

Loranger is interested in the DAT because this product represents a significant quality improvement to present technology that will create consumer excitement and position our company profitably for the future. While attending a recent conference on recording quality in present format, it was mentioned by Guy Costa of Motown Records that "If it isn't broke, don't fix it," thus implying that today's quality is good enough. This type of attitude does not service the artist nor the consumer and means that the consumer is locked into 1960 quality.

Ford Motor Company today represents an example of where excellence pays off. Five years ago product quality, profits, and Ford's future were all bleak. Today they are leading the auto industry forward. It is important we allow technology to progress to give the American consumer the best.

We have several fundamental problems with S. 506. The most important of these is that the premise underlying the legislation—that home taping is pernicious and that the anti-taping chip is needed to stop taping on DATs—is absolutely false.

The recording industry has long claimed that it loses billions of dollars in sales from home taping. This is not so. I know that people buy records and compact discs and then make tapes—of the music that they own—for their car stereos. This practice does not hurt the recording industry because the record companies have no legitimate entitlement to force customers to buy a second cassette version of the music that they already own.

Moreover, many home tapers make selection tapes for their cars. For these home tapers there are no prerecorded custom cassettes that are available. How has a record company lost anything when a selection tape is made by the home taper?

Finally, home tapers buy records and compact discs so that they can make tapes for their cars and other portable playback devices. Regarding this practice, I see the industry as only gaining—not losing—from home taping.

A second important point is that no one will buy DAT recorders that do not record. The anti-taping chip, if required, will be the death knell for the DAT. Even though some record companies may not encode their music, you should not be misled as to the impact of enacting S. 506. If Congress passes this legislation and DAT recorders have anti-taping chips, who will buy a tape recorder that does not have the capabilities of existing machines?

Third, I have read that the recording industry believes that the struggle to bring a new, exciting technology to the marketplace is really a battle between the Japanese hardware manufacturers and American record companies. Nothing could be further from the truth. My company represents a vital, domestic segment of the consumer electronics and entertainment industry. We have employees and distributors who depend on growth and change in consumer electronics. Our livelihood depends on new formats and new applications of existing technology. In short, we relish technological change and advances.

It is important for you to understand that DAT is a natural evolution from the CD and analogue cassette formats. I don't understand why the recording industry should be able to prevent us and our customers from enjoying the advantages of the DAT. Yet, this is exactly what they are trying to do.

By asking Congress to stop DATs for three years, the recording industry is imposing an artificial product cycle on the free market. I have significant reservations about legislation that would chain us to the industry's notion of when a product should be introduced. After all, first audio cassettes were introduced, and the record companies resisted them fiercely; then CDs came along, and that technology is enormously profitable for them. Now DAT has the potential to be a new and very significant source of revenues. Just because the record companies want to protect the monies they are making from CD is no reason to allow them to block the DAT. I believe that the two formats can live side-by-side.

Beyond the interests of my company, the DAT gives consumers what they want: high fidelity and portability in their music. In fact, DAT technology, when it is installed in cars, will make American automobiles more attractive to the public. Loranger hopes to manufacture the tapes for the mobile DAT technology. I will be proud knowing that my products are part of the decision to purchase a car manufactured by Ford and other leaders in the automobile industry.

The recording industry has always been skeptical of the benefits of new technology. Yet, the DAT offers much to record companies, to duplicators, to the manufacturers of DAT tapes, and, most importantly of all, to the American public. Given a chance, and over time, I believe the DAT will prove not merely promising but very profitable. In the meantime, I urge that you oppose S. 506.

Sincerely yours,

ROBERT T. LORANGER,
Senior Vice President and Treasurer.

SONY HAWAII CO.,
A DIVISION OF SONY CORPORATION OF AMERICA,
Honolulu, HI, May 13, 1987.

Senator DANIEL K. INOUE,
*Hart Senate Office Building,
U.S. Senate, Washington, DC.*

DEAR SENATOR INOUE: We understand that you are Chairman of the Subcommittee on Communications of the Senate Committee on Commerce, Science and Transportation and that you subcommittee will be holding a hearing on S. 506, legislation on Digital Audio Tape ("DAT") technology, on May 15, 1987. As one of your constituents, I am asking you to oppose S. 506. If you would be so kind, could you please include this letter in the record of the hearing.

I am President of Sony Hawaii Company and am writing to you because S. 596 would block a technology that is exciting and could be enjoyed by many, many Americans, especially the people here. As you may know, Sony Corporation of America employs about 6,500 people across the United States. Sony Hawaii, a division of Sony Corporation of America, employs fifty-five full- and part-time employees. Throughout the island chain, we distribute consumer and professional electronic products to approximately one hundred retail outlets.

Senator Inouye, the consumer electronics industry—from manufacturing, to distribution, to retail—depends on the flow of new products. More importantly, we do all we can to give the public the latest in entertainment technology—products such as the videocassette recorder, the audio tape deck, car stereos, the Sony "Walkman," and compact disc ("CD") players. In fact, Hawaii consumers purchased over \$17 million worth of consumer products in fiscal year 1986! Sony Hawaii itself was ranked in the top 250 Hawaii corporations and the number one firm in electronics.

Make no mistake, consumers will want that DAT. But, DAT technology will only be available to them if S. 506 is stopped in its tracks. We understand that S. 506 prohibits the distribution and sale of DAT recorders without the anti-taping chip.

If S. 506 passes, it will kill the DAT. Why? Because no consumer will want a tape recorder that cannot tape. No consumer will want a tape recorder which has capabilities inferior to those on the market today. No consumer will want to spend money on a technology that depends on a "notch" filter—which audibly degrades the sound of prerecorded music on playback. In short, S. 506, if passed, would simply derive consumers of the opportunity to choose a new technology.

I believe that our local people in particular will want DAT recorders. Hawaii is a state in love with recreation. We like the outdoors and want to take our music with us. In fact, as you may know, the Walkman portable stereo is very popular in Hawaii for just this reason.

The DAT combines high quality sound—digital sound just like that now available on compact disc—with complete portability. The DAT cassette is smaller than a conventional cassette and DAT units will be popular for car stereo units and, like the Walkman, for personal stereos.

I know that the recording industry is saying that DAT is a threat because it will increase home taping. We do not believe that DAT players will be used any differently from conventional analog players. Now, people tape tapes, records, or discs that they own. They buy recorders to play back prerecorded tapes or tapes that they have made of their own albums or cassettes. With DAT, they will continue these practices in the future. What's wrong with that? (Of course, whether or not consumers will be able to play back prerecorded DAT tapes rests squarely in the hands of the major record company labels. Right now, however, the large record companies are stating that they refuse to produce prerecorded music in the DAT format.)

Sony Hawaii now distributes compact disc players and audio recorders. We hope that we will be able to distribute DATs. Introducing a new format can be exciting and provide tremendous business opportunities for both the hardware and software industries, and for the consumer. Thus, although we understand that the record in-

dustry wants to protect its investment in CD, we strongly believe that all these formats can and will thrive. Indeed, we are counting on the fact that the formats are complementary! We do not think it appropriate for the government to step in, to protect one format (the CD) over another (the DAT).

On behalf of my employees and all of Hawaii's people who love music and the convenience of recording and playback technology, I urge that you oppose S. 506. Thank you for your favorable consideration.

Sincerely,

R. SAKAI, *President.*

DIGITAL AUDIO & COMPACT DISC REVIEW,
WGE PUBLISHING, INC.,
Peterborough, NH, May 13, 1987.

Senator DANIEL K. INOUE,
*Hart Senate Office Building,
Washington, DC.*

DEAR SENATOR INOUE: As members of the consumer electronics community with a particular interest in digital audio, we are greatly alarmed at the prospect of restricting the sale of consumer rotary digital audio tape cassette recorders (R-DAT) machines.

S. 506 calls for a one-year ban on the importation of DAT units that do not incorporate a specific notch-filter-based copyguard copy protection system.

It is the technology chosen for this system that concerns us most. It requires the actual removal of vital musical material centered upon 3838 Hz from all pre-recorded media; Compact Discs, LP records, and cassettes. This audio frequency, while out of the range of many musical fundamental tones, is absolutely critical to the accurate reproduction of the acoustic overtones that help us to identify different musical instruments. In short, the audible range in question helps put the fidelity in high-fidelity.

Forcing the inclusions of an electronic system to prevent DAT recorders from being able to record from compact discs with a slice of their audio removed will needlessly increase the cost of the DAT recorders, making it even more difficult for this new technology to be accepted.

It is highly unlikely that record companies will remove the key audio frequencies from the compact discs since news of this butchering of the sound will quickly become known to CD buyers. The consumer magazines rating compact discs will quickly make it a point to make sure that all such butchered CDs are identified. This can be expected to seriously affect their sale, resulting in a serious reluctance of the record companies to butcher their CDs. This approach would seem to be doomed to failure on the basis of the logical consumer reaction. Even if no difference could be heard, the negative consumer emotional reaction would doom the system.

Should the industry pursue the proposed butchering of CDs as a way to try and prevent copying by DAT recorders, this would merely escalate the electronic warfare one more step. I estimate that a device could be put on the market to detect the missing audio on the CDs and replace it so the DAT system would find no missing frequencies to trigger the copy prevention circuit. This device should be able to be marketed for under \$10. Making such a device illegal will only spur an underground supply, just as making CB amplifiers did a few years ago.

To do so hamstringing the Compact Disc medium, in particular, which has made incalculable contributions to the rejuvenation of the American recorded music industry, would be a grave error, and a needless one.

There already exists a "bit copy" system built into the Compact Disc's digital data structure that would effectively restrict the digital-to-digital copying that might be exploited by music "bootleggers." This system has no effect whatsoever on the music program, and so will not detract from the high level of technical excellence that the Compact Disc now enjoys.

There are other factors which make it unlikely that DAT systems will be used widely for copying compact discs—or even LPs, for that matter.

For instance, there is the cost of the DAT system itself, which at its present cost of around \$1,200 will limit its desirability. Yet without the economies of scale of large production runs it is unlikely that the price of the equipment will be lowered significantly. Unlike CD players, DAT systems already heavily depend on large scale integration, so there are few major cost reductions which can be expected.

Normally, as with VCRs and CD players, we would expect an enthusiastic acceptance by consumers to reduce the cost of a system by at least 30 percent per year for the first three or four years. But with DAT systems, even if the volume of sales meet the most optimistic levels, reductions in manufacturing cost will be much more modest.

Then there is the cost of the DAT tape cassettes. The present prices of these are around \$13 for the normal two-hour cassette and \$9 for one hour. Since the cost of blank cassettes is not much less than CD costs, their use for copying CDs as an economy measure are unlikely. The high cost of the cassettes are expected to be a seriously restraining factor in the sale of pre-recorded DAT cassettes.

Manufacturers of CDs and DAT tape have estimated that the raw material cost of the two technologies are very close, so it is unlikely that we will ever see a wide spread between the two media in consumer cost. Indeed, the expected slow acceptance of DAT should keep the tape well ahead of CDs in cost, providing an edge to CD sales for several years.

Thirdly, there is the matter of what motives there will be for consumers to buy DAT systems. Without few benefits in making copies of CDs, their use comes down to just how much need there is for a tape recorder which provides substantially better quality than can be had with today's inexpensive Philips cassette recorders. If DAT sales have any relationship to the practical uses for the recorders, their sale should be very limited.

Some hope has been expressed that DAT recorders might be used by low end professionals to replace the F1 Sony PCM unit which is used with a regular VCR for making digital recordings, thus making it possible for small record companies to be formed and make digital recordings for release on compact discs. This application would be expected to make it possible for hundreds or even thousands of small businesses to enter the field—which otherwise would continue to be dominated by a small group of large record companies.

Unfortunately the decision by the DAT manufacturers to prevent making recordings at the 44.1 kHz sampling frequency is going to make it almost impossible to use DAT recorders to make CD masters—at least unless they modify the recorders so they are able to record at the CD standard sampling rate. I predict that hobbyist magazines will quickly provide articles describing circuit modifications for CD recorders which will enable them to record at any desired sampling rate—including 44.1 kHz. It's better not to try and mess with short-term technological fixes for long term problems. The proposed systems for preventing copying are neither practical nor needed. Finally, we would like to remind you that in every case where industry has attempted to inhibit the free advancement of technology, whether video cassettes, computer software, or digital audio, the industry clamoring for protection has ultimately fared better from the new technology's acceptance than it had without it.

In closing, we urge you most energetically to vote against this bill, and allow new technology to inject the excitement into the American marketplace on which it thrives.

Sincerely,

WAYNE GREEN,
Editor/Publisher.

COMMUNICATION RESEARCH, INC.,
Pittsburgh PA, May 15, 1987.

HON. DANIEL K. INOUE,
Hart Senate Office Building, U.S. Senate, Washington, DC.

DEAR SENATOR INOUE: Please find attached my statement in opposition to S. 506, the anti-DAT legislation. This statement will appear in the July 1987 issue of *Digital Audio* magazine as a guest editorial.

I ask that this letter and its attachment be made a part of the record of the May 15 hearing on S. 506.

Thank you.

Sincerely,

MARC FINER,
President.

Attachment.¹

¹ See *Digital Audio*, July 1987, p. 22.

HITACHI SALES CORP. OF AMERICA,
Los Angeles, CA, June 2, 1987.

HON. DANIEL K. INOUE,
*Chairman, Subcommittee on Communications, U.S. Senate Committee on Commerce,
Science, and Transportation, Washington, DC.*

DEAR CHAIRMAN INOUE: I am writing to correct the record of your Subcommittee's hearing on May 15, 1987, regarding the copyright issues presented by the new digital audio tape (DAT) technology.

Specifically, I am writing to correct a misimpression about Hitachi's DAT marketing plans that may have been conveyed by two of the witnesses at your hearing, Mr. Jason Berman, who testified on behalf of the Recording Industry Association of America and Mr. David Stebbings, who testified on behalf of CBS Records. I ask that this letter appear in the record of your hearing immediately following the testimony of these two gentlemen.

Both in their prepared statements and during Mr. Stebbings' oral presentation, these witnesses asserted that Hitachi has exhibited DAT machines that record using the same sampling rate as the rate used in compact disc playback, so that the machines would be capable of digital-to-digital copying, or in Mr. Berman's words, "digital cloning." These witnesses seemed to imply that Hitachi might market such DAT machines in the United States.

The facts are quite different. The DAT machines that Hitachi has just begun to market in Japan and that we hope to make available to consumers in the United States will not permit digital-to-digital copying. Hitachi's DAT machine will not "clone" compact discs, and they will not "clone" pre-recorded DAT tapes.

Like other actual and potential DAT manufacturers, Hitachi has chosen to adhere to a two-part technical standard that prevents such digital-to-digital copying:

First, the sampling rates for CDs and DATs will be different. While music on CDs is digitally encoded and read using a sampling rate of 44.1 KHz, the DAT will not record at this sampling rate. The DAT will record and play at a rate of 48 KHz, and play (only) at a rate of 44.1 KHz. It will thus *not* be possible to make a direct digital-to-digital "clone" of a CD on a DAT machine.

Second, a digital "flag-code" encoded in the source music by the producer of the music, will prevent digital-to-digital copying by a DAT machine, whether the digital source is a CD player or a pre-recorded DAT tape. When the DAT machine "reads" this flag-code, it simply stops copy recording.

These technical features of Hitachi's DAT machines will prevent the use of our machines to copy directly from digital sources such as CDs and pre-recorded digital tapes. When our machine is used to record through its analog inputs, it will make a very good recording, but our machine will not make a "digital clone." As noted above, my understanding is that other DAT manufacturers intend to adhere to these technical standards, as well. I hope this clarification is helpful.

You should know that Hitachi Sales Corp. of America based in Los Angeles, California, is a member of the Home Recording Rights Coalition, and joins the Coalition in urging your Subcommittee and the Congress to reject proposals, such as those embodied in S. 506, to disable DAT machines with mandatory copycode scanners.

Sincerely

YUZURU KOBAYASHI,
President.





